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THE UNIVERSITY OF ALBERTA

THE CONSTRUCTION AND VALIDATION OF THE REMOTE POSSIBILITIES TEST

BY

©

ROBERTA LOUISE KOZIEY

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES

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ABSTRACT

This dissertation is based upon a theoretical position formulated by Cautela (1964) stating that some individuals expect the most dreaded and least likely experiences to befall them in almost all situations. Persons who subscribe to this belief entertain what Cautela labels the Low Probability Hypothesis (LPH). The purpose of the present study was the construction and validation of a psychometric instrument which would measure the existence of the LPH and the extent to which it was present in individuals. The instrument, a 40-item test, was termed the Remote Possibilities Test (RPT). The higher the score, the more the belief in the LPH is present in the scorer. Loevinger's (1957) model for test construction was followed throughout the development of the test, and evidence for the substantive, structural and external components of construct validity were obtained. The original form of the RPT (80 items) was refined through agreement among three judges on the items believed to be relevant to the construct under investigation. Further refining in the form of item analysis was conducted after administration of the RPT to a socio-economically representative sample of 209 subjects. The final form of the RPT and five tests of related personality constructs were then administered to a sample of 411 and submitted to correlational analysis.

Significant positive relationships were found between

the LPH and four variables, permitting the following conclusions: high scorers on the RPT entertain more irrational ideas, have lower self-concepts, are externally controlled and are more necrophilic than are low scorers. The hypothesis that high RPT scorers would be conceptually simple was not upheld.

Further evidence for validity entailed determining if differences existed between known groups. The RPT was administered to 20 in-hospital psychiatric patients. 20 scores were randomly selected from the total sample of 411 and a test of significance was carried out. RPT scores of psychiatric patients were significantly higher than those drawn from the normal sample.

RPT score variance was found to be relatively independent of verbal ability and abstract reasoning ability. A predicted inverse relationship of the RPT with age was obtained, though the hypothesis that there would be no significant differences in the relationship between RPT scores of males and females was not upheld. Females obtained higher scores.

Reliability estimates derived by the Kuder-Richardson formula and the test-retest procedure were .75 and .83, respectively.

The evidence seemed to lend support to the fact that the RPT is a viable instrument, being both valid and reliable. Implications for counsellors, further research and the factors underlying the development of the LPH were explored.

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CHAPTER I

INTRODUCTION AND STATEMENT OF THE PROBLEM

Clients are motivated to seek counselling for a wide variety of reasons that range from difficulties in vocational choice to rather severe problems in emotional adjustment. Cautela (1964) proposes that some clients present a particular kind of problem which he calls the Low Probability Hypothesis (LPH). An individual subscribing to this hypothesis is one who always expects the most dreaded and least likely experiences to happen to him in almost all situations. Expectations similar to these are apt to be found in neurotic individuals, particularly in those displaying symptoms of obsession, phobia, anxiety, and compulsion. An obsession is diagnosed as being an exhibition of intense concentration of thought on one point in the individual's environment; concentration of action, rather than thought, is labelled a compulsion. When anxiety is displaced on a symbolic substitute in the environment that can, if the individual so desires, be avoided, the condition is called a phobia.

The contention here, however, is that the LPH differs from the above-mentioned neurotic conditions and is, in fact, a unique method of cognitive functioning. The present study suggests that the LPH may be an evaluative predisposition, an individual's personal system of ordering his environment. Rather than being situation-specific, as are compulsions, obsessions, and phobias, the LPH is regarded as being more

diffuse. It is conceived of as not being restricted to any particular referent object, but as being directed toward any object. The action a person takes or does not take at any given time is seen as being influenced by the manner in which he breaks down and organizes impinging stimuli. These stimuli are organized into meaningful patterns congruent with the individual's own needs and psychological make-up. Each person's "experiential filter" (Harvey, Hunt and Schroder, 1961) defines either the positive or negative quality of an event, which in turn determines the nature of his affective arousal. Consequently, individuals vary in their reactions to situations as each reaction is consistent with the person's conceptual organization, and is meant to produce the maximum positive affect.

The present study proposes that individuals may vary along a continuum in the manner in which they assess the "goodness of outcome" of a situation. Faced with the question, "What shall I do," the person at the normal end of the continuum will have access to a number of alternate possibilities. He will assess the situation and be free to choose the best of all possible alternatives. Faced with the same question, an individual at the opposite end of the continuum, that person who entertains the LPH, has few choices before him. For him there is always the distinct probability that whatever action he takes, the least likely and most dreaded experience will befall him. In the face of a choice, his differential capacity is greatly reduced, as in his

ability to behave creatively, to withstand stress, and to cope effectively.

It is difficult to dispute the importance of being able to be open and to respond to life creatively, flexibly, and adaptively. When reduced to essentials, a counsellor's function is really to help clients consider ways of enhancing these abilities. His (her) concern is ultimately with freeing and utilizing human resources. As is well known, reaching these goals can be a long and arduous task for both client and counsellor. In order to expedite matters therapeutically, psychometric instruments are often used, assisting the therapist in identifying what might be a specific area of neurosis. Bergin (1971) writes of the "urgent necessity to work toward specifying precisely the change desired (in therapy) and developing a specific measure for it" (p. 239). According to Paul (1967), therapy should be concerned with "what treatmeant, by whom, is most effective for this individual with that specific problem, and under what circumstances" (p. 110). Bergin also points out that there is little use in further promoting the average, non-specific, typical kind of therapy. There appears to be a definite value in identifying particular neurotic conditions in the initial client interview so that therapy may be tailored to each individual. "Thus, if a person seeks help for severe depression, we would tend to measure change in depression rather than his global psychological status" (Bergin, 1971, p. 258). Cattell (1965) argues that a better understanding of a diagnosis would also

enlighten therapy.

> Measurement is even more important in evaluating the effectiveness of particular kinds of therapy or treatment. Until we know what we are treating, the direction and planning of treatment is obviously wild and vague. And until we can demonstrate how much patients have benefited from this kind of treatment compared with that kind, we have no objective way of deciding whether any treatment is an improvement on its historical predecessor (p. 206).

To date, no instrument existed that would help the counsellor to identify the LPH. The concern of the present study was:

1. the examination of personality variables which would seem to relate to a definition of the LPH and an attempt to isolate the LPH as a particular clinical category with its attendant conditions.
2. the construction of an instrument which would isolate those individuals who entertain the LPH and measure the extent to which they do.
3. the validation of the instrument through a fairly extensive construct validation network.
4. the specification of relevant personality dimensions unique to LPH, outlining a clinical picture and possible history and development of the condition.

As noted above, the present study proposed to develop a psychological test which would measure the LPH. In order to be viable, a psychometric instrument must meet two central concepts of classical test theory, namely, reliability and validity (APA, 1974). Over the years, many different

types of validity have been discussed, including content, face, concurrent, predictive, and construct. Loevinger (1957) was the first to note that construct validity was all-inclusive and, by its very nature, encompassed all other validities. Anastasi (1968) followed with the statement that construct validity "is a comprehensive concept which includes the other types. There is no information provided by any other validation procedure that is not relevant to construct validity (p. 132)." The 1974 APA Standards clearly state that, though validities may be discussed independently, they are all interrelated operationally and logically.

Given that construct validity and reliability are the essential requirements for the viability of a test, what steps must be taken in test construction to ensure the presence of these concepts? Loevinger's model for construct validity was chosen over others because it provides a clear, well-defined basis. She conceives of construct validity as having three components: substantive, structural, and external. These three aspects are closely related to the three steps in the test construction process: compilation of a pool of items, analysis of the internal structure of the pool and consequent selection of items to form a scoring key, and correlation of test scores with external criteria. Evidence obtained from the above steps is both psychometric and psychological and the convergence of these lines of evidence should establish construct validity (Loevinger, p. 685).

Because of the clarity of the step-by-step process outlined by Loevinger, and the assurance that construct validity would be obtained if the process were followed, the present study proposed to adhere to her model. Consequently an initial version of the instrument (80 items) was administered to 209 subjects from various walks of life chosen so as to be a stratified random sample of the socio-economic make-up of the Edmonton metropolitan area. An analysis of the response of these subjects to the initial form was carried out and a final form (40 items) subsequently prepared. This final form was then administered to 411 individuals for construct validation purposes. This involved examining the relationship between the devised instrument and existing, logically-related personality variables. Specifically, studies were undertaken to check out the relationships between the LPH and irrational beliefs, external control, self-concept, life orientation, and conceptual complexity. Analyses were also conducted to ascertain whether or not the RPT was in any way related to measures of verbal ability and abstract reasoning ability. Age and sex, were investigated as possible sources accounting for some test variance.

The instrument is a paper-and-pencil test termed the Remote Possibilities Test (RPT). Low scores are those who entertain a fewer number of low probability hypotheses than do high scorers.

CHAPTER II

REVIEW OF THE LITERATURE

Cautela (1964) advanced the notion that the individuals who always expect the most unlikely and least desirable event to occur are entertaining a low probability hypothesis. As far as is known, through a perusal of the literature and through personal communication with Cautela*, no further research has been done or is known to exist which explores this theory. However, the low probability hypothesis concept appears logically related to other personality formulations and may be clarified by a consideration of the following variables, each one of which might tap a dimension of the LPH: irrational beliefs, external control, low self-concept, necrophilia and conceptual complexity.

RELATED PERSONALITY VARIABLES

Irrational Beliefs

The individual who attends to the LPH might be conceptualized by Ellis (1962) as one who entertains irrational ideas. It is Ellis' conviction that we are all indoctrinated by societal institutions and that we grow up to believe many superstitious, senseless ideas. Our beliefs are nurtured and maintained by a process of self-indoctrination through internalized sentences. An individual's emotional

*See Appendix A

disturbances are the illogical and unrealistic things he tells himself about a fact, an event or a behavior or attitude of another person.

> Ours is a generally neuroticizing civilization, in which most people are more or less emotionally disturbed because they are brought up to believe and then to internalize and to keep reinfecting themselves with arrant nonsense which must inevitably lead them to become ineffective, self-defeating, and unhappy (1962, p. 9).

Ellis outlines 11 major illogical and irrational ideas which he believes are rampant in our society and which would seem to lead to neurosis. Of particular relevance to this study are the fifth and sixth irrational beliefs: the idea that unhappiness is caused by outside circumstances, and that the individual has no control over it; the idea that if something is or may be dangerous or fearsome one should be terribly concerned about it and should keep dwelling on the possibility of its occuring (1962, p. 75).

Individuals who attend to the LPH are convinced that a dreadful thing will happen to them in certain situations and firmly believe this in the face of obviously contradictory facts. The probability of a catastrophe occuring could be one in hundred thousand but that does not deter these people from fearing that one chance. It would also appear that the individuals who entertain a number of LPH's are among those people who are not convinced that they are personally responsible for their attitudes and reactions to outside forces and events. Ellis postulates that these people feel helpless to change their dreadful feelings about situations. Not only do

they expect horrible things to happen to them but they also believe that some force external to them is making them feel the way they feel.

Zingle (1965) found that underachieving students who were counselled according to Ellis' rational-emotive therapy orientation showed a significant reduction in the number of irrational beliefs they entertained. The results of a preponderance of research on underachieving students (Purkey, 1970) would allow us to describe these students, prior to counselling, as not having held much faith in their own power to direct their lives and as believing that factors outside themselves were responsible for their failure. It is probable that they also grew to expect failure and consequently engaged in self-defeating behavior.

The view that individuals who entertain the LPH labor under irrational ideas seemed to be a viable one. In order to test this conjecture, the Adult Irrational Ideas Inventory (AII) developed by Davies (1970) and based on the original inventory designed by Zingle (1965) was used. The specific prediction related to the hypothesis is that high scorers on the RPT will be more irrational in their belief system than will be low scorers.

External Control

It would appear that individuals who believe in the LPH might be described as having a feeling of helplessness related to themselves and to their environment. Rotter (1971)

describes the individual who is externally controlled as one who believes that reinforcement for his behavior comes from outside himself. "He might feel that luck or chance controlled what happened to him. He might feel that fate has pre-ordained what would happen to him. He might feel that powerful others controlled what happened to him"(1971, p. 59). An internally controlled person, on the other hand, believes that his own actions control his reinforcement; his responses produce gratification and he is the effective determiner of his behavior.

DeCharms (1968) and Smith (1973) describe people who, more than others, seem to be in charge of their lives, as "Agents" or "Origins" of personal causation, as opposed to "Pawns." "People seeing themselves as Origins or Pawns may make the crucial difference as to whether they actively live their lives or merely suffer them"(Smith, 1973, p. 20). DeCharms (1968), describing the essence of the concept of personal causation, puts forth the belief that man is the originator of his behavior, the unique locus of causality. However, though man has the desire to be the master of his fate, he feels more like an Origin under some circumstances and more like a Pawn under others. An Origin has a strong feeling that he determines his behavior and is capable of effecting changes within his environment. "The feedback that reinforces his feeling comes from changes in his environment that are attributed to personal behavior... it is a powerful motivational force directing future behavior"

(DeCharms, 1968, p. 274). A Pawn, on the other hand, believes that "causal forces beyond his control, or personal forces residing in others, or in the physical environment, determine his behavior" (ibid). This will result in a strong feeling of ineffectiveness and powerlessness. This might also be the case for individuals who entertain the LPH and who don't have much faith in their ability to produce any effect on their surroundings.

Early encounters with his environment force man to take an active role, testing and deriving valid personal knowledge from it. The results of these active interventions on his world determine, to a degree, man's attitude toward his effectiveness. According to Seligman (1973), the helplessness of the externally controlled person is learned. He has come to believe that he is powerless and ineffectual because of previous failing experiences with controlling his environment. For instance, experiments conducted with dogs and their ability to control or not control electric shock to themselves proved that when their actions did not matter, dogs learned that they were helpless and gave up all attempts to relieve themselves of the trauma of the shock. Seligman reports that humans learn helplessness and are symptomatically very similar to depressed individuals.

One of the main characteristics of a depressed person is his passivity. According to Freud (1933/1965), the hostility of depressed people is generally directed toward themselves rather than outward and thus, the passivity.

A coping method an individual might use in an attempt to reduce this sense of internal persecution would be to project it outside and experience it as external danger (Thorner, 1957).

> It can be seen that these patients will use any situation which contains elements of a test as a means of dealing with dangers threatening from their internal world. The anxiety they feel is not only a reaction to the test. They also use the experience of the test to diminish their anxiety; for, in it, they can make an internal danger become external, and convert a universally bad internal object into something specific and so, limited (Thorner, 1957, p. 290).

Externally controlled people have been described experimentally in a number of ways. They appear to have a tendency toward resentfulness and hatred toward others as a result of feeling powerless to change their world by their own means (Freedman, 1961); they are frequently underachievers (Rotter, 1971); they perceive others, specifically parents, as psychologically controlling (Patsula, 1969), and they place great emphasis on fate and unpredictable forces (Rotter, 1971).

It would seem, from the above descriptions, that a person who believes that the worst possible thing that could happen will happen, might be one who conceives of reinforcement for his behavior as coming from outside himself; he does not seem to be in charge of his life. This individual would entertain a number of LPH's. However, this conjecture is in need of direct experimental support. Rotter's Internal-External (I-E) Scale, developed in 1966, was used to determine the direction of internality and externality of beliefs. The plausible

hypothesis was that high scorers on the RPT would be higher in external control than would be low RPT scorers.

Low Self Concept

It seems logical to hypothesize that a person who believes in the LPH--who believes that the worst possible thing will happen to him most of the time, no matter what he does, would not have many positive feelings about himself. The "excitatory person" described by Salter (1966) is one who feels good about himself, is relaxed, spontaneous, direct and master of his environment. A person who attends to the LPH might be described as one who has difficulty believing that he is a worthwhile individual. Coopersmith (1967) defines self-esteem as the evaluation an individual makes and generally maintains with regard to himself. "It expresses an attitude of approval or disapproval, and indicates the extent to which an individual believes himself to be capable, significant, successful and worthy" (p. 4-5). Theorists (Salter in Patterson, 1966; Rogers, 1951; Snygg and Combs, 1959; Allport, 1961) agree that a person's behavior is determined by the way he feels and thinks and sees himself. "Behavior is consistent with the organized hypothesis and concepts of the self-structure" (Rogers, 1951, p. 191). Snygg and Combs state that "the ways we react to people, tasks, and roles, are those which seem to us to be the most consistent with our self-image" (p. 146).

Harris (1967) describes four possible psychological positions held with respect to oneself and others. These are:

1. I'm OK--you're OK
2. I'm OK--Your're not OK
3. I'm not OK--you're OK
4. I'm not OK--you're not OK

The third position, the introjective position, is a common one of persons who feel powerless when they compare themselves to others. They feel at the mercy of other people. In essence, they are saying, "My life is not worth much." James and Jongeward (1971) borrow from the vernacular and label these self-rejecting individuals "losers." A loser seldom lives in the present. He destroys his present by occupying his mind with past memories or future expectations. "Some losers live constantly under the dread of future catastrophe. They conjure up expectations of "what if"; "what if I lose my job...; what if I lose my mind...; what if something falls on me..." (p. 5). By constantly keeping his focus on the future, an individual experiences anxiety at the moment; his mind is occupied with concerns irrelevant to the situation at hand. Consequently, his perceptions of the present are very often incorrect and incomplete. All of this person's fears and anxieties exist for him because he cannot accept himself as a worthwhile, effective individual. Rogers (1951) considers self-acceptance to be crucial for psychological health and growth.

Johnson (1972) lists a number of characteristics of a self-accepting individual, two of which are particularly relevant here:

1. He does not spend undue time worrying about what is coming tomorrow or what has happened in the past.
2. He has confidence in his ability to deal with problems, even in the face of failure and setbacks (p. 144).

Because of his distorted view of situations and his anticipation of the worst, it would seem logical to conclude that such an individual, with a measurably low self-concept, would entertain a number of LPH's. Specifically, it was predicted that high scorers on the RPT would be lower in self-concept than low RPT scorers.

The Tennessee Self-Concept Scale developed by Fitts (1965) was used as a measure of self-acceptance.

Death Orientation (Necrophilia)

Another variable that may be related to the LPH is one described by Fromm (1964) who proposed that people are either life-oriented or death-oriented. He called these orientations biophilia and necrophilia, respectively. Biophilia is characterized by a love of life and Fromm considers this the normal orientation among healthy individuals. Necrophilia, on the other hand, is characterized by a deep attraction to death and by a fascination by all that is not alive. Fromm proposed that necrophilic individuals tend toward automaton

conformity characterized by suppression of critical thinking, personal decision-making and spontaneity. (Fox, 1969) found that necrophils were indeed more dogmatic, authoritarian, and more critical of social institutions than were individuals with biophilous tendencies. They also entertained more irrational ideas. On the basis of the previous postulations herein, it would appear that some of the behavioral correlates that reflect the LPH also reflect necrophilia.

Freud (1933/1965) wrote of the striving toward death and toward life as two biologically-given tendencies in all living things and the basic cause of all man's behavior. He postulated that Eros was an instinct for life or self-preservation and that the death instinct, Thanatos, propelled the organism toward one aim, that of self-destruction--destruction against the outside world and even against one's self. This description is perhaps somewhat extreme for LPH individuals, however it does elucidate Fromm's dichotomizing of life orientation.

Fromm does not believe that an orientation toward death is a normal biological tendency, but that it is a pathological phenomenon. For him, necrophilia is a true perversion. "It is the most morbid and the most dangerous among the orientations to life of which man is capable" (1964, p. 24).

It seems possible that individuals who are very much afraid of situations in everyday life and who entertain the LPH could be exhibiting necrophilic tendencies. The description of these individuals allows for the hypothesis that

high scorers on the RPT will be higher on necrophilia than will be low RPT scorers. Fox's Life Orientation Test (LOT, 1969), a measure of anti-life (necrophilous) and pro-life (biophilous) tendencies, was used for the study.

Conceptual Complexity

Individuals who believe in the LPH are conceived of as people who tend to conform, who are passive rather than active, and who are controlled by external stimulus conditions. Conceptual complexity, a variable studied by many, e.g. Stager (1957); Harvey, Hunt and Schroder, (1961); Vannoy (1965); Schroder, Driver and Streufert (1967), similarly deals with some of the same issues. Supposedly, conceptual complexity is what influences people's perceptions and evaluations of events. Harvey, Hunt and Schroder (1961) formulated a theory of personality structure which postulates a continuum of conceptual functioning from a very simple (concrete) to a very complex (abstract). In their paradigm, they describe four conceptual systems, representing major stages of conceptual conflict. System 1 is the most cognitively simple and System 4, the most cognitively complex. Particularly relevant to this study are the individuals classified under System 2. Characteristically, these people are pessimistic, negativistic, distrustful and inclined to view the actions of others directed toward themselves as potentially threatening. They are a consequence of what Harvey et al. describe as "unreliable unilateral training" (p. 178). This condition is described as "unreliable"

because of the inconsistency and unpredictablity of their parents' reinforcement contigencies. "Unilateral" refers to the parents' judging the child's behavior in terms of how well the child's responses match some external criterion set by the parents. The child is not valued for himself, but rather, in terms of his achievement relative to his ability to match these external criteria. As a consequence, the child attempts to extricate himself from this control and soon develops a negative attitude toward the parent or, for that matter, toward any authoratative source. He becomes distrustful of authority and looks upon any control with suspicion. For this individual, blame is always externalized; the training conditions necessary for the emergence of a conscience are lacking.

In reality, these individuals are very much controlled by external impositions, the very forces against which they are rebelling. Outside criteria are responsible for their rebellious behavior against outside criteria in that their behavior is guided by rejection of social prescriptions.

A characteristic of people classified under System 1 functioning is also the attribution of causality to external forces. This occurs as a result of failure to differentiate between their own experience (their "self") and the external world.

> Until the self does reach a certain growth, it does not enter as a major referent into the individual's attribution of causality. Instead of perceiving the self as a source or cause of an event, external

> or internal, the cause is seen to stem from external sources (Harvey et al., 1961, p. 39).

System 1 individuals are the result of "reliable unilateral training" which consists of "the imposition of reliable and consistent criteria so that the subject can learn to behave in accordance with these external standards" (Harvey et al., p. 127). Rewards and punishments are administered in a reliable manner. Only certain behaviors are acceptable; all others are punished. Rewards are granted for ideas and behaviors which conform catechismically to the omnipotent standards of the parent. As a result of this training, children develop such traits as politeness, timidity, obedience, submission and docility. Later on in life, these traits are evidenced by high religiosity, superstition, and dependence on representatives of institutional authority. For these people, values are internalized without the benefit of insight or understanding.

Uncertainty about the external criterion is catastrophic because external criterion is central and crucial for this individual so that he can make judgements about the consequences of his behavior. Consequently, later on in development, categorical black-and-white-thinking rules are adopted to avoid this ambiguity of criteria. A very strong conscience is formed and many System 1 individuals are among those who adopt fundamentalist religious points of view with absolute faith in divine control.

Both Systems 1 and 2 attribute causality to externals, albeit for different reasons. It is the contention of this study that individuals who entertain a number of LPH's would be those classified under Systems 1 and 2. A further contention is that the presence of the LPH would be more frequent among System 2 individuals.

The Conceptual Systems Test (CST) was used as a measure of conceptual complexity to test the hypothesis that high scorers on the RPT were more conceptually simple than were low scorers.

Abstract and Verbal Reasoning

It was hypothesized that the LPH, as measured by the RPT, would show some correlation with irrational beliefs, external control, self-concept, life orientation and conceptual complexity. However, in order to demonstrate construct validity, it should be shown not only that a test correlates with other variables with which it should theoretically correlate, either positively or negatively, but also that there is no significant relationship with variables from which it should differ (Campbell, 1960). "Demonstration of negligible relationship with known sources of distortion is an essential, not an optional, step in test validation" (Loevinger, 1957, p. 674). For example, intelligence is a variable which should be negligibly or not at all correlated with the LPH. The Differential Aptitude Tests was chosen as a measure of abilities substantially equivalent to the usual

group tests of intelligence. Studies (Williams, 1952; Whittemore, 1966; Bennett, Seashore, Wesman, 1966) reported correlations of .60 to .85 between the sub-tests, Verbal Reasoning and Abstract Reasoning Ability and intelligence tests such as the Stanford-Binet, Form L, the Lorge-Thorndike, and the Otis Quick-Scoring Mental Ability Test.

In addition, facility of administration to groups, coupled with its ease of scoring, were attractive features influencing the choice of the DAT over other tests measuring similar abilities.

CRITERION GROUP FOR PREDICTIVE VALIDITY

Though it would appear that all persons entertain a number of Low Probability Hypotheses, those who subscribe to the belief in this hypothesis to a greater degree would logically be more severely affected in their everyday lives. As mentioned in Chapter I, when faced with the question of what to do in a certain situation, those individuals considered "normal" would be those who could freely assess the alternate choices before them. Faced with the same question, persons entertaining the LPH to a greater extent would conceivably have fewer choices and would experience a great deal of fear and stress. Their range of interpersonal functioning and the number of behavioral outlets open to them would be greatly reduced. Reality would be distorted by their beliefs of impending dread so that their perceptions would be less than accurate.

Buss (1973) assures us that everyone has transient episodes of anxiety, depression, and feelings of worthlessness. However, when discomfort is frequent, repetitive, or chronic, abnormality is indicated. The abnormal person is one who is usually excessively fearful, experiencing intense or frequent anxiety. He generally has major fears which may seriously affect his basic adjustment. Buss (1973) lays out three main classifications of neurotic behavior and symptomatology. A brief description of these will serve our purposes at this point. First, there are indicants of excessive fear, displayed by worry, tension, restlessness, and distractibility. Next, there would be self-defeating attempts to cope with fear situations, and thirdly, there would be evidence of psychological residues of prolonged tension such as depression, tiredness, boredom, and bodily complaints.

Given the above description of individuals who entertain a high number of low probability hypotheses, and the description of neurotic persons, it appears logical to assume that the LPH would be more in evidence in neurotics. Few studies have demonstrated an association between the constructs that may be related to LPH and psychopathology. However, studies by Taft (1968), Davies (1970), and Beck (1966) have demonstrated a relationship between irrational ideas and neurotic behavior. Taft (1968) discovered a significant relationship between irrational beliefs and anxiety, finding evidence to support the statement by Ellis (1962) that human beings usually sustain emotional arousal

or anxiety as a result of irrational or illogical thinking. A study by Davies (1970) demonstrated a significant difference in irrational beliefs between a normal sample and a mental hospital patient sample and an alcoholic sample. Beck (1966) describes a study wherein patients suffering the most severe depression were those whose thinking seemed to be most illogical and irrational. There was also evidence that an individual's cognitive activity actually initiated the state of depression.

It seems likely that the belief in the occurence of the worst possible and the least likely event will be more frequent in neurotic individuals. Therefore, it is the contention of the present study that individuals diagnosed as neurotic and hospitalized as a result of their non-coping behavior, will entertain more low probability hypotheses than will "normal," non-hospitalized persons.

HYPOTHESES

Several hypotheses were implied in the foregoing discussion. Those examined are enumerated below. As has previously been indicated, high scores on the RPT are indicative of the existence of the Low Probability Hypothesis. The main hypothesis tested in the present study was that the presence or absence of the LPH, as indicated by scores on the RPT, would occur in a construct validation network.

1. High scorers on the RPT will be more irrational in their belief system than will be low RPT scorers.
2. High scorers on the RPT will be higher in external control than will be low RPT scorers.
3. High scorers on the RPT will be lower in self-concept than will be low RPT scorers.
4. High scorers on the RPT will be higher on necrophilia than will be low RPT scorers.
5. High scorers on the RPT will be more conceptually simple than will be low RPT scorers.
6. There will be no difference in the verbal ability of high and low RPT scorers.
7. There will be no difference in the abstract reasoning ability of high and low RPT scorers.
8. There will be no significant difference in the relationship between the RPT scores of males and females.
9. Scores on the RPT will decrease as a function of age.
10. RPT scores of in-hospital psychiatric patients will be higher than RPT scores of other groups.

CHAPTER III

CONSTRUCTION OF THE REMOTE POSSIBILITIES TEST

CONSTRUCT VALIDITY CONSIDERATIONS

Over that past few years, the techniques of test development have been increasingly refined and much more attention has been paid to validity, particularly, to construct validity. The APA's (1954) original definition of construct validity was rather vague and imprecise. They divided validity into four types, content validity, concurrent validity, predictive validity, and construct validity. The implication was, however, that it was optional which kind of validity was proposed for a test (Loevinger, 1957). This definition was subsequently elaborated upon by Cronbach and Meehl (1955), who wrote probably the first major paper in the area. They accepted the APA's analysis of validity but did assert that construct validity is necessary whenever the trait under consideration cannot be measured directly. However, Cronbach and Meehl did not include specific techniques for the assessment of construct validity in their discussion of theoretical issues. For Loevinger (1957), construct validity of a psychological test is conceived as having three aspects: the substantive component, structural component and external component. "These three aspects are mutually exclusive, exhaustive of the possible lines of evidence for construct validity, and mandatory" (Loevinger, 1957, p. 653). In 1966,

the APA revised its statement on validity and accepted and incorporated Loevinger's ideas breaking validity into three aspects corresponding to Loevinger's components, each one being absolutely essential: content validity, criterion-related validity, and construct validity.

In this study, an attempt was made to use Loevinger's prescription for construct validity as a guide to test development.

SUBSTANTIVE COMPONENT

Item Preparation and Selection

The substantive component of validity is defined by Loevinger (1957) as the extent to which the content of items included in a test is accounted for in terms of the trait presumed to be measured and the context of measurement. It is referred to as content validity and implies the inclusion of items in a test solely on the basis of theory.

The first step in the construction of the RPT involved the collection of a pool of items operationalizing the theory of the low probability hypothesis. Specific items for the RPT were composed after much discussion, over a period of a year, with a number of people who had been familiarized by the author with the idea of the LPH. Each one of these individuals was asked what would constitute a very real and personal behavioral description of a low probability hypothesis. On the basis of these operational descriptions, including some of the author's, 120 items were prepared.

Because test items should stand up under criticism from experts in the subject matter tested (Cronbach, 1960), the pool was then submitted to three judges familiar with Cautela's article. Items which the judges were unable to categorize as discriminating were rejected and an initial 80-item version of the RPT was constructed with the remaining items. (See Appendix B) This version was then administered to 209 individuals.

STRUCTURAL COMPONENT

Item Analysis

According to Loevinger (1957), the structural component refers to a further refining of the instrument through examining it psychometrically with respect to the nature of the inter-correlations of the items within the scale. This investigation includes such aspects as homogeneity or functional unity. Although, in the opinion of the judges, the items seem to be alike, do they really function or behave as a team in actual practice?

The initial 80-item version of the RPT was administered to 209 subjects, ranging in age from 11 to 66 years. These subjects were randomly selected Edmontonians, gathered from many districts and representing a wide range of occupations. The socio-economic status was calculated on the basis of these occupations using Blishen's (1958) Canadian Occupational Scale. An acceptable mean of 52.4 and a standard deviation of 10.84 were obtained, allowing the conclusion that

this general sample was socio-economically representative of the population of Edmonton.

The internal consistency of the instrument was then examined through and item-total correlational analysis performed on the responses of these 209 subjects. Anastasi (1968) writes, "A test whose items were selected by this method can be said to show internal consistency, since each item differentiates in the same direction as the entire test" (p. 117). The results of the item-analysis showing the item-total correlations are listed in Table 1.

TABLE 1

ITEM-TOTAL CORRELATIONS FOR THE
80-ITEM INITIAL RPT (N=209)

ITEM NO.	ITEM-TOTAL r.	ITEM NO.	ITEM-TOTAL r.	ITEM NO.	ITEM-TOTAL r.	ITEM NO.	ITEM-TOTAL r.
1	.173	21	.190	41	.110	61	.475
2	.230	22	.432	42	.380	62	.304
3	.302	23	.460	43	.437	63	.369
4	.253	24	.282	44	.470	64	.323
5	.453	25	.239	45	.239	65	.410
6	-.231	26	.111	46	.473	66	.247
7	.152	27	.268	47	.423	67	.393
8	.228	28	.387	48	.238	68	.205
9	.477	29	.255	49	.426	69	.469
10	.503	30	.544	50	.433	70	.172
11	.244	31	.304	51	.103	71	.223
12	-.032	32	.494	52	.268	72	.312
13	.291	33	.061	53	.151	73	.310
14	.292	34	.428	54	.271	74	.136
15	.194	35	.472	55	.436	75	.488
16	.458	36	.320	56	.368	76	.174
17	.265	37	.406	57	.233	77	.322
18	.529	38	.248	58	.322	78	.120
19	.152	39	.494	59	.178	79	.440
20	.312	40	.307	60	.433	80	.291

Final Item Selection

The basic criterion for the final draft of the RPT was the results of the item-total correlation. Thorndike (1949) states that an item which shows very low correlation with the total score on a test is "either very unreliable or a measures functions quite different from those measured by the rest of the items in the test" (p. 214). He recommends that items showing low correlations with the test as a whole and particularly those showing negative correlations should either be rejected completely or revised and tried out again. On the basis of this advice, items were rank-ordered from high to low correlations (.544 to -.032) and the 40 items with the most acceptable correlations (.544 to .304) were selected to comprise the final form of the RPT. (See Appendix C) Table 2 lists the item-total correlations for the final form.

TABLE 2

ITEM-TOTAL CORRELATIONS FOR THE
40-ITEM RPT (FINAL FORM)

ITEM NO.	ITEM-TOTAL r.	ITEM NO.	ITEM-TOTAL r.	ITEM NO.	ITEM-TOTAL r.	ITEM NO.	ITEM-TOTAL r.
1	.281	11	.269	21	.605	31	.246
2	.355	12	.320	22	.344	32	.311
3	.168	13	.329	23	.281	33	.472
4	.314	14	.309	24	.136	34	.122
5	.502	15	.390	25	.311	35	.248
6	.262	16	.229	26	.379	36	.366
7	.404	17	.279	27	.517	37	.227
8	.265	18	.227	28	.225	38	.366
9	.315	19	.411	29	.232	39	.294
10	.379	20	.384	30	.300	40	.364

EXTERNAL COMPONENT

Validation Network

The third sequential step in the construct validation of an instrument is concerned with establishing criterion-related validity. This can be assessed by using a predictive or a concurrent criterion. Concurrent validation is the one most frequently used and is generally accomplished by correlating the scores of an accepted instrument to the scores of the new instrument.

In the present study, this was accomplished by correlating the scores on the RPT with the psychological instruments listed in Table 3.

TABLE 3

PSYCHOLOGICAL INSTRUMENTS EMPLOYED IN THE STUDY

	TEST	VARIABLE	SOURCE
1.	Adult Irrational Ideas Inventory	Belief Irrationalty	Davies, 1971
2.	Internal External Control Scale (I-E Scale)	Internal-External Control	Rotter, 1966
3.	Tennessee Self-Concept Scale	Self-Concept	Fitts, 1965
4.	Life Orientation Scale (LOT)	Biophilia-Necrophilia	Fox, 1969
5.	Conceptual Systems Test (CST)	Conceptual Complexity	Harvey, 1966
6.	Differential Aptitude Tests (DAT)	Verbal and Abstract Reasoning	Psychological Corporation, 1961

INTERPRETATION OF RPT SCORES

Means and standard deviations were obtained on the RPT for the total sample of 411 subjects and separately, for the males and females in the sample. These data are tabulated in Table 4. As can be seen, assuming a normal distribution, roughly 68% of all cases, falling within ±1 standard deviation, obtained scores between 4 and 14. However, there was a difference, significant beyond the .001 level, between male and female subjects. Male subjects, as a whole, scored below the total mean of 9.16, while females subjects scored slightly above.

TABLE 4

MEANS AND STANDARD DEVIATIONS FOR THE RPT FOR MALES (N=137), FEMALES (N=274) AND FOR TOTAL SAMPLE (N=411)

	N	MEAN	S.D
MALES	137	8.18	4.73
FEMALES	274	9.68	5.00
TOTAL	411	9.16	4.96

RELIABILITY CONSIDERATIONS

Test-retest on the RPT was obtained by administering the test to 179 students enrolled in the winter session, 1975, at the University of Alberta. The interval between the testing periods was three weeks. The reliability coefficient derived was .83.

A further estimate of reliability was obtained by using the Kuder-Richardson formula 20. This procedure yielded a coefficient of .747.

CHAPTER IV

DATA COLLECTION PROCEDURES

Sample

The sample utilized for the final step of the construction of the RPT consisted of students in attendance at the University of Alberta during the summer session, 1975. Subjects ranged in age from 18 to 76 years and were students enrolled in courses in the faculties of Education, Sociology, Political Science, and Psychology. The sample totalled 411. Most of the testing took place during regular class time although participation was voluntary. A list of tests administered and the number of students who completed each test is found below in Table 5. Some students completed the entire battery, some only three, and most completed two. Each student was administered the RPT first. Following this test, he was randomly assigned as many other tests as he had time to finish. Therefore, the number of subjects for each test administered varies according to time constraints. For example, as shown on Table 5 below, while 105 of the 411 subjects were administered the AII, only 32 had time to take the lengthier DAT.

In order to increase the validity of a test, a criterion group may be employed to ascertain whether or not the test in question differentiates between groups (Cronbach and Meehl, 1955). Accordingly, a group of in-patients on the psychiatric ward of the Misericordia Hospital, Edmonton, (N=20) was ad-

ministered the RPT. The sample was composed of 14 women and six men and their provisional diagnoses were as follows:

Schizophrenia	5
Reaction Depression	6
Obsessive-Compulsion	1
Anorexia Nervosa	1
Psychotic Depression	2
Psychosomatic Illness	1
Drug-induced Psychosis	1
Valium Addiction	1
Manic-depression	1
Alcoholism, personality disorder	1
TOTAL	20

TABLE 5

NUMBER OF TESTS ADMINISTERED

NAME OF TEST	N
Remote Possibilities Test	411
Life Orientation Test	98
Conceptual Systems Test	91
Tennessee Self-Concept Scale	87
Adult Irrational Ideas Inventory	105
Internal-External Control Scale	96
Differential Aptitude Tests Abstract Reasoning Ability	32
Differential Aptitude Tests Verbal Ability	41

Instruments

The LPH should relate to measures of other constructs presumed to be indicators of the LPH. This part of test construction examines convergence of indicators (Cronbach, in Thorndike, 1971) and is accomplished by correlational studies between the instrument to be validated and established measures. The six tests used in the study are described below. All have adequate reliability and validity coefficients. It was assumed that each one would correlate with the RPT in the manner previously hypothesized.

Adult Irrational Ideas Inventory

The 60-item Adult Irrational Ideas Inventory (AII) (Davies, 1970) is based on the original inventory designed by Zingle (1965). This scale is used to measure the concept of mental health forwarded by Ellis (1962), specifically, the extent to which an individual adheres to irrational ideas.

The items of the instrument are single statements scored on a five-point Likert scale, ranging from "strongly agree" to "strongly disagree." The higher the score, the higher the degree of irrationality.

Construct validity has been established by Conklin (1965), Zingle (1965), and Taft (1968). Studies with the scale have reported positive relationships between irrationality and underachievment (Zingle, 1965), depression (Beck, 1966), necrophilia (Fox, 1969), alcoholic tendencies

(Davies, 1970), and marital adjustment (Eisenberg, 1971).

Rotter Internal-External Control Scale

The Internal-External Control Scale (I-E Scale) developed by Rotter (1966) consists of 29 forced-choice items including six filler items to make the purpose of the test somewhat more ambiguous. The 23 items deal with the subject's belief about the nature of the world, specifically, expectations about how reinforcement is controlled in a wide variety of situations. The score is the total number of external choices.

Test-retest reliability is satisfactory and the scale correlates well with other methods of assessing the same variable, such as questionnaires and interview assessments.

Studies with the scale have reported relationships between internal-external control and powerlessness (Patsula, 1969), lower socio-economic status (Battle and Rotter, 1963), and measures of scholastic aptitude (Rotter, 1966).

The Tennessee Self-Concept Scale

The Tennessee Self-Concept Scale was constructed by Fitts (1965). It is a self-administering instrument consisting of 100 self-descriptive statements of which 90 assess the self-concept and 10 assess self-criticism. The items are scored on a Likert-type scale with responses ranging from "completely false" to "completely true". Scoring can be done either by hand or computer and recorded on a profile sheet which may be presented directly to the client for

interpretation and discussion.

Test-retest reliability coefficients are generally in the high .80's and several scores from the scale have high correlations with other measures of personality functioning, such as the Taylor Manifest Anxiety Scale and the MMPI. Extensive validity studies have been carried out. The most important single score on the test is the Total Positive Score. Consequently, it was the one used for the purposes of this study. It reflects the overall level of self-esteem.

Life-Orientation Test

The Life-Orientation Test, developed by Fox (1969), is an instrument designed to obtain a measure of a person's life orientation as described by Fromm, specifically, anti-life (necrophilous) tendencies and pro-life (biophilous) tendencies. The instrument consists of 40 items to which the respondent answers on a five-point Likert-type scale with choices ranging from "I agree" to "I disagree." Low scores indicate a necrophilous orientation and high scores indicate a biophilous orientation.

Extensive work was done by Fox (1969) to ascertain the validity of the instrument. Test-retest procedures yielded an estimate of reliability of .83. Reliability was also obtained from odd-even item correlations and applying the Spearman-Brown formula, yielding an estimate of .71.

Conceptual Systems Test

The Conceptual Systems Test (CST) is an objective measure of conceptual level with items derived from actual responses by subjects in their completions of the TIB (This I Believe Test). The subject is required to respond to 49 statements on a Likert-type scale. Low values indicate disagreement except in items 42 and 44 which are scored in the opposite direction.

Factor analysis of the CST has yielded six theoretically meaningful factors (Harvey, (1967). These factors have been labelled Divine Fate Control (DFC), Need for Structure and Order (NS-O), Need to Help People (NHP), Need for People (NFP), Interpersonal Aggression (IA), and General Pessimism (GP). Bower (1969) reports test-retest reliability estimates of .89.

For correlational purposes, a total score was necessary for each test. The scoring method suggested by Harvey (1966) is for classification purposes only and does not lend itself to the computation of a total score. Consequently, an alternative scoring procedure was developed in order to provide a total complexity score. In addition, total scores were computed separately for each sub-test.

Differential Aptitude Tests

The DAT is an integrated battery including eight tests designed to measure an individual's fundamental intellectual abilities (Bennett, Seashore, Wesman, 1966). It was developed in 1947 and updated in 1963 at which time a complete

restandardization was carried out. The two aptitudes measured for the purposes of this study were: Verbal Reasoning and Abstract Reasoning Ability.

Verbal Reasoning is a test measuring the ability to understand concepts framed in words. The test items are analogues, a form widely used in tests of intelligence and supposedly a good measure of general intelligence.

Abstract Reasoning is a non-verbal measure of reasoning ability. It supplements the general intelligence aspects of two other tests of the DAT battery, Verbal and Numerical. The ability to perceive relationships in abstract figures pattern is involved.

The validity of the DAT has been established innumerable times over the past 30 years and the fact that the DAT is widely accepted by counsellors and educators is testimony to its superiority as an accurate measure of aptitudes.

Much evidence of reliability and long-range stability is available for each test separately, for each sex, and in each grade. Coefficients computed for male and female for the test of Verbal Reasoning and Abstract Reasoning Ability range from .89 to .94.

CHAPTER V

STATISTICAL ANALYSIS AND RESULTS

Overview

The present study was concerned with two general problem areas, the first being the construction of an instrument which would identify those individuals who entertain low probability hypotheses, and the measurement of the extent to which they do. The second purpose was the validation of the new instrument through a validation network.

In this section, the results derived from testing the hypotheses stated in Chapter II are presented. A discussion of the various results has been placed in Chapter VI, along with the implications for further research.

It will be recalled that a correlational analysis was planned to test the relationship between the RPT, five personality constructs, and other possible sources of variance. In addition to these variables, six cognitive complexity scores for the CST were included. This resulted in a total of 16 variables upon which computations were carried out. The results of this analysis appear in the matrix found in Table 6. A .05 level of significance was selected to establish support for each of the research hypotheses. The scatter distributions for each of the correlation analyses, along with the appropriate regression lines are given in Appendix E. An attempt was made to classify each RPT scorer who completed the CST (N=91) into one of the four

TABLE 6

INTER-CORRELATIONS BETWEEN THE RPT AND CORRELATES

	AGE	SEX	RPT	LOT	CST-T	DFC	NSO	NHP	NFP	IA	GP	TENN	AII	IE	DAT-A	DAT-V
AGE																
SEX	-.047															
RPT	-.109*	.146														
LOT	-.199**	-.205	-.227*													
CST-T	.022	-.135	.019	.470*												
DFC	-.031	.130	-.208*	-.434	-.454***											
NSO	-.105	.177	-.023	-.355	-.354***	.359***										
NHP	-.186	.181	.003	-.062	-.126	.285**	.299**									
NFP	-.001	.169	.078	.015	-.282**	.249*	.355***	.466***								
IA	-.071	-.116	-.154	-.230	-.171	.09	.000	-.188	-.036							
GP	.070	-.115	-.149	-.321	-.380***	.312**	.152	-.157	.020	.487***						
TENN	.080	.083	.439***	-.010	-.378	-.425	.223	-.009	.198	.206	-.473					
AII	-.026	.037	-.505***	-.608***	-.274	-.023	-.181	.319	.146	-.042	.204	-.437				
IE	-.344***	.288***	-.333***	-.153	-.062	-.017	.102	.118	-.172	.421	.213	.298	.325			
DAT-A	-.634***	-.366*	.264	-	-	-	-	-	-	-	-	-	-	-		
DAT-V	.114	.114	.178	-	-	-	-	-	-	-	-	-	-	-	-	

*p < .05
**p < .01
***p < .001

systems of conceptual complexity described by Harvey et al. (1961). These data are reported in Table 11.

The hypotheses are hereafter separately restated, accompanied by the relevant findings of the study, and the conclusions appropriate to each hypothesis.

Hypotheses Related to Personality Variables

Hypothesis 1: High scorers on the RPT will be more irrational in their belief system than will be low RPT scorers.

The correlation between the RPT and the AII, the instrument used to test irrationalty of belief, was .505 and significant at the .0001 level.

Hypothesis 1 was accepted.

Hypothesis 2: High scorers on the RPT will be higher in external control than will be low RPT scorers.

The data in Table 7 support Hypothesis 2 in that the correlation between the RPT and the Internal-External Control Scale was .333 and significant at the .001 level.

Hypothesis 2 was accepted.

Hypothesis 3: High scorers on the RPT will be lower in self-concept than will be low scorers on the RPT.

The correlation between the RPT and the Tennessee Self-Concept Scale was -.439 and the level of significance was .0001.

Hypothesis 3 was accepted.

Hypothesis 4: High scorers on the RPT will be higher on necrophilia than will be low RPT scorers.

A correlation coefficient of -.227, with a probability of .024, was obtained between the RPT and the LOT, the measure of biophilia-necrophilia.

Hypothesis 4 was accepted.

Hypothesis 5: High scorers on the RPT will be more conceptually simple than will be low RPT scorers.

The data reported in Table 7 failed to confirm this hypothesis. The observed correlation was -.019 which did not attain the required level of confidence although the direction of the correlation was consistent with the prediction.

Hypothesis 5 was rejected.

Conclusions

1. High scorers on the RPT are more irrational in their belief system than are low RPT scorers.
2. High scorers on the RPT are higher in external control than are low RPT scorers.
3. High scorers on the RPT are lower in self-concept than are low RPT scorers.
4. High scorers on the RPT are higher on necrophilia than are low RPT scorers.
5. High scorers on the RPT are not more conceptually simple than are low RPT scorers.

TABLE 7

PEARSON PRODUCT MOMENT CORRELATIONS BETWEEN THE RPT AND FIVE PERSONALITY VARIABLES

VARIABLES	N	r	P		PD*
LOT	98	-.227	.024		-
CST	91	-.019	.859	ns	-
Tennessee Self-Concept Scale	87	-.439	.000		-
AII	105	.505	.000		+
IE	96	.333	.001		+

*Predicted direction of correlation

Hypotheses Related to Other Possible Sources of Variance

It will be recalled that predictions were made in Chapter II with regard to sex, age, verbal ability and abstract reasoning ability. Specifically, these hypotheses were generated to counter evidence which might be suggested as to other sources of variance on the RPT. Evidence for lack of relationship between the RPT and these variables would be further evidence for construct validity of the RPT (APA, 1966).

Hypothesis 6: There will be no difference in the verbal ability of high and low RPT scorers.

The correlation between the RPT and the Verbal Ability sub-test of the Differential Aptitude Test was -.178, a

correlation coefficient not attaining statistical significance.

Hypothesis 6 was accepted.

Hypothesis 7: There will be no difference in the abstract reasoning ability of high and low RPT scorers.

Table 8 presents data supporting this hypothesis. The required level of significance was not attained for the correlation coefficient of -.264.

Hypothesis 7 was accepted.

TABLE 8

PEARSON PRODUCT MOMENT CORRELATIONS BETWEEN THE RPT AND THE DAT

VARIABLES	N	r	P	
DAT Verbal Ability	41	-.178	.266	ns
DAT Abstract Reasoning Ability	32	-.264	.144	ns

Conclusions

1. There is no difference in the verbal ability of high and low RPT scorers.
2. There is no difference in the abstract reasoning ability of high and low RPT scorers.

Hypothesis 8: There will be no significant difference in the relationship between RPT scores of males and females.

This hypothesis was not upheld. The correlation coefficient was .146, ($p<.05$). In the system used for coding the answer sheets for optical scoring procedures, males were assigned a value of one, and females, a value of two. Consequently, the coefficient indicates that females tended to score higher on the RPT than did males. A t-test was carried out to determine the significance of the difference between the means of males and females. The results (two-tailed t-test, $p<.01$) did not support the hypothesis.

Hypothesis 8 was rejected.

Hypothesis 9: Scores on the RPT will decrease as a function of age.

The data in Table 9 supports the above hypothesis. A correlation coefficient of -.109, ($p<.05$) was obtained, allowing the conclusion that age is a factor contributing to score variance on the RPT.

Hypothesis 9 was accepted.

Conclusions

1. Females score higher on the RPT, i.e. females entertain a greater number of low probability hypotheses than do males.
2. Scores on the RPT vary as a function of age, i.e. older individuals score lower.

TABLE 9

PEARSON PRODUCT MOMENT CORRELATIONS BETWEEN THE RPT AND AGE AND SEX

VARIABLES	N	r	P
Sex	411	.146	.003
Age	411	-.109	.027

Hypothesis Related to Criterion Group

Hypothesis 10: RPT scores of in-hospital psychiatric patients will be higher than the RPT scores of other groups.

Twenty scores were randomly selected by computer out of the total sample of 411 subjects. A t-test was then carried out to determine whether or not the difference between the RPT means of these 20 and the 20 in-hospital psychiatric patients was significant. The results obtained were submitted to the Welch T Prime Adjustment for unequal variances (Table 10).

Conclusion

The data below are evidence of support for the hypothesis as the in-hospital group scored higher on the RPT than did the control group.

TABLE 10

T-TESTS FOR DIFFERENCE BETWEEN MEANS OF RPT FOR RANDOM SAMPLE AND IN-HOSPITAL PSYCHIATRIC SAMPLE

$MEAN_1$[a] (N=20)	$MEAN_2$[b] (N=20)	$S.D._1$	$S.D._2$	$VAR._1$	$Var._2$	D.F.	ADJ.D.F.	P
9.25	16.25	5.00	6.02	25.04	36.20	38	36.78	.00015

[a] $MEAN_1$ = Random Sample

[b] $MEAN_2$ = Psychiatric Sample

Classification of RPT Scores into Conceptual Systems

An attempt was made to classify all RPT scorers who completed the CST (N=91) into one of the four conceptual systems described by Harvey et al. (1961). The number and percentage of subjects in this study falling into the four systems, as well as the desired percentage distribution for each system suggested by Harvey (1966) are reported in Table 11.

TABLE 11

CONCEPTUAL SYSTEMS CLASSIFICATIONS (N=91)

SYSTEMS	NUMBER	PERCENTAGE	DESIRED PERCENTAGE
System 1	17	19	30
System 2	3	3	15
System 3	22	24	20
System 4	29	32	7
Unclassifiable	20	22	30

Conclusions

Percentage arrived at for the subjects who completed the CST differed considerably from the desired distribution suggested by Harvey (1966). Possible factors contributing to this discrepancy will be discussed in Chapter VI. Though the desired percentages were not obtained for classification purposes, the means of each system (Table 12) were as predicted. Systems 1 and 2 scored above the RPT mean of 9.16, while Systems 3 and 4 scored below.

TABLE 12

MEANS, STANDARD DEVIATIONS, AND VARIANCES ON THE RPT FOR CONCEPTUAL SYSTEMS (RPT MEAN = 9.25)

SYSTEM	N	MEAN	VARIANCE	STANDARD DEVIATION
1	17	11.0	23.8	4.9
2	3	11.3	25.3	5.0
3	22	8.8	15.6	3.9
4	29	8.9	24.1	4.9
TOTAL	71	9.5	21.1	4.6

Summary of Conclusions

The findings of this research appear to give fairly solid support to the RPT as being a usable psychometric instrument.

Evidence for the validity of the RPT comes from inter-judge agreement on the items used in the original form of the test, followed by strong item-total correlations allowing for the construction of the final form of the RPT.

Further evidence for the validity of the RPT comes from the correlations between the RPT and the LOT, the AII, the Tennessee Self-Concept Scale, and the I-E Scale. The RPT was also found to distinguish between groups.

CHAPTER VI

DISCUSSION

Review

The purpose of the present study was the construction and validation of a psychometric instrument which would measure the existence of the Low Probability Hypothesis and the extent to which it was present. Loevinger's (1957) model for test construction was followed throughout the development of the test, and evidence for the substantive, structural and external components of construct validity were obtained, resulting in a viable instrument, the Remote Possibilities Test. The original form of the RPT was refined through agreement among three judges on the items believed to be relevant to the construct under investigation. Further refining in the form of item analysis was conducted after administration of the RPT to a socio-economically representative sample of 209 subjects. The RPT and five personality variables were then administered to a sample of 411 University of Alberta summer school students, and submitted to correlational analysis. The RPT alone was administered to 20 in-hospital psychiatric patients and the results of this sample were compared to the results of a random sample of 20 subjects from the total of 411.

In this chapter, a discussion of the various relevant findings will be presented, along with conjectures as to the possible development of the LPH, the implications for

counsellors, and the suggestions for further research.

Discussion of Results of Main Hypotheses

The predicted relationships between the RPT and the Adult Irrational Ideas Inventory, the Life Orientation Test, the Tennessee Self-Concept Scale, and the Internal-External Control Scale, were experimentally demonstrated as all variables correlated significantly in the predicted direction with the RPT. However, analysis did not support the prediction of a significant relationship between the CST, the measure of conceptual complexity, and the RPT. It was hypothesized that individuals who scored high on the RPT would score low on the CST, a high score on the CST indicating conceptual complexity. Though the correlation was in the predicted negative direction, it was not statistically significant.

There are several possible explanations. The homogeneous structure of the population sampled did not allow for appropriate differentiation of the CST respondents into the four systems proposed by Harvey (1966). Harvey validated the TIB (This I Believe Test), from which the CST was developed, on a sample of college students, mostly undergraduates. The sample used in the present study was composed mainly of school teachers, averaging approximately 30 years in age. Further, their motivation for being enrolled at the university can be assumed to be somewhat different from that of undergraduate students.

One other explanation for the lack of significant findings may lie in the instrument itself. Problems of measurement with the CST have previously been noted by Bower (1969) and Stewin and Anderson (1974). It appears that the different approaches in describing conceptual systems levels have been reflected in different instruments. Anderson and Stewin discuss Harvey's emphasis as being essentially on the religious orientations of his subjects, and the CST as basically measuring religiosity, whereas Schroder (1967) stresses information processing in his approach. Indeed, the one significant correlation with the CST and the RPT was with sub-scale 1, Divine Fate Control, the defining scale for System 1.

A particular finding which merits some attention is that which is related to the differences in mean scores between sexes. The hypothesis that there would be no significant differences on mean scores between males and females was rejected, and there was every indication in the analysis that the mean score for females would be significantly greater than the mean scores for males. (Two-tailed t-test $p < .01$). There are several alternative explanations as to why females might score higher on the RPT than males:

1. Females, usually acknowledged as more open to therapy, may simply respond more openly to their vulnerability or weakness. This may also be part of what is typically regarded as a sex-stereotype, where females are expected to be more open to their

feelings and males, more closed.

2. This result may simply be an artifact of the particular sample population.

A confirmed finding that warrants brief discussion is that of the correlation between age and the RPT. Older people scored significantly lower on the RPT than did younger subjects. Data obtained by Rotter (1971) lend support to this finding. He reports that individuals seem to become more internal as they get older, suggesting that age, maturity, and experience are contributing factors to the generalized expectation that one can influence one's environment. If a person believes that he can actually have some say in his life, he will be less likely to submit to the belief that the most dreaded of events will befall him, no matter what he does.

Development of the LPH

A knowledge of some possible background factors leading to the formulation of the LPH might be useful in furthering an understanding of therapy for the individual who entertains these remote expectations.

On the behavioral level, it would appear that parental systems of reward and punishment are important determinants of their child's attitude toward life situations. When there is a lack of proper proportion of reward and punishment by parents and when the main technique for controlling the behavior of the child is punishment, the child comes to associate participation in many activities with fear and punish-

ment. Cautela (1964) believes that this fear is then generalized to other situations, eventually causing these situations to be among those avoided in life. This seems to be especially so if the punishment is accompanied by negative labelling, shaming, and rejection (Buss, 1961).

The developmental history of individuals who fall into conceptual System 1 is very similar and is worth looking at briefly as System 1 functioning was found to correlate with the presence of the LPH. Harvey (1967) describes such individuals as the result of parental training consisting of the administration of rewards and punishments for certain specific behaviors only, those being designated by the parents. The standards for the behavior, consequently, are imposed from outside the individual. He has no chance to develop his own values and anything outside the externally imposed scheme of things would be something to avoid, something "bad."

Rotter (1966) put forth the basic hypothesis that if a person perceives reinforcement as contingent upon his behavior, the potential for the recurrence of that behavior in the same or similar situation is high. However, if he sees the reinforcement as being outside himself, dependent on chance, fate, or other (i.e. parents, teachers, superiors), then the chances of the recurrence of the preceding behavior are very low.

Certain psychoanalytic dynamics can also be explored briefly in attempting to account for the etiology of the LPH.

The individuals for whom the usual kind of probability does not seem to apply may actually believe that he is a special case, destined to be punished. Perhaps because of extreme punishment early on in his development, or perhaps because of extreme parental religiosity, this particular person has come to project his harsh superego on the external world. "Somehow he has to be punished by events not usually punishable for other people" (Cautela, 1964, p. 670). A mechanism of defense is in the working at the time for he can, at least, avoid a punishable situation, whereas avoiding the ire of his superego would have been impossible.

Implications for Counsellors

Given a knowledge of the possible etiology of the LPH, what specifically can a counsellor do to help resolve the dilemma? Cautela (1964) suggests a counselling approach which appears to be a balanced blend of insight and behavioral therapy. It seems at first important to spend time with the client exploring the underlying basic conflicts to his problem, such as his dependency on his parents or on other figures of authority, and/or perhaps, his resentment toward them. This includes a "working through" of relevant attitudes and feelings which is generally followed by added insight. Now insight alone rarely produces much change. A shift to the cognitive takes place at this point in therapy with a discussion of the LPH. An appeal to the rational side of the client is made and he is encouraged to be aware that

the probability is heavily in his favor in the particular situation(s) that trouble(s) him. The client is helped to make adaptive discriminations aimed at separating imaginary fears from real ones. Constant reassurance by the therapist, combined with a series of successive approximations should further aid the process. The client is encouraged to engage in situations where he previously felt an undesirable experience would occur. Throughout therapy, an attempt is made to integrate the notion of the LPH with the relevant factors in the client's personal history.

Cautela (1964) reports success using the above-described method. Other counsellors may indeed evolve slightly different personal techniques. Assessment of the presence of the LPH with the RPT could be a boon to expediting therapy and to pointing it in the specific direction of the LPH.

Suggestions for Further Research

For future study, factor analysis could be applied to the data in order to isolate and define the specific variables making up the RPT. It would then be possible to provide a clearer definition of LPH in terms of these constructs. Factor analysis would also be a desirable statistical operation in view of the fact that the measures against which the RPT was compared were not independent measures.

Some preliminary norming for males and females could be carried out, then determining how the high and low scores vary along other dimensions such as psychopathology. Along

with this, a closer look could be taken at low scores to define further the specific nature of the instrument.

It might be interesting to inbed the items on the RPT in other personality scales and see how the RPT would function along with other personality dimensions.

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APPENDICES

APPENDIX A

BOSTON COLLEGE
CHESTNUT HILL
MASSACHUSETTS 02167

DEPARTMENT OF PSYCHOLOGY

June 5, 1973

Roberta Koziey
Department of Educational Psychology
The University of Alberta
Edmonton 7, CANADA

Dear Ms Koziey:

Thank you for your inquiry concerning my article "The Low Probability Hypotheses."

Since writing the article, I have not pursued the problem in a manner put forward in the article. I think the major tenet of the article still holds. I now approach that kind of hypothesis among clients more behaviorally. I don't know of any research expanding on my original idea. I have a hunch Albert Ellis pursues the notion somewhat in his work.

Should you come up with anything interesting, let me know.

Sincerely,

Joseph R. Cautela

Joseph R. Cautela, Ph.D.
Professor of Psychology

JRC/cbs

APPENDIX B

RPT

Read each of the following statements and decide whether it is True or False as it pertains to you personally, most of the time.

Mark your choice on the separate answer sheet provided.

There are no right or wrong answers.

There is no time limit but do not spend too much time on any one question.

Use a pencil, not a pen.

Please mark every item.

EXAMPLE:

1. There are four seasons in a year.

Answer:

1. A 1 B 2
   ——— ====

The answer is True (A 1)

2. The United States has a prime-minister as head of state.

Answer:

2. A 1 B 2
   ==== ———

The answer is False (B 2)

1. I don't think that I will ever be thrilled or excited about anything.

2. People don't care about one another as much as they pretend to care.

3. If I have children, I am confident that they will be normal.

4. Insurance policies often expire just before you need them.

5. The light bulb which burns out is usually the most unreachable one in the house.

6. People think bad and negative things about me.

7. I believe that hunting is one of the most dangerous sports around.

8. There are bound to be some rotten oranges in a box of oranges.

9. It is likely to rain on days I plan picnics and outings.

10. If I am involved in an accident in which there is only one fatality, I will be that fatality.

11. I don't believe that people who praise me expect anything from me.

12. I am sure that I am going to feel better as I grow older.

13. I tend not to make wise and correct decisions.

14. I am fearful of being fired.

15. People talking near me are probably not talking about me.

16. A movie I decide to see will have stopped showing the night before.

17. I am fairly certain that the first draft of a letter I am writing won't be suitable for mailing.

18. I will say the wrong thing at the wrong time.

19. I am sure that I am going to feel worse as I grow older.

20. I am confident that I can deliver a speech well.

21. I don't believe that people ever think that I'm amusing.

22. When my superior calls me to his office, I feel sure that I've done something wrong.

23. I hesitate to enter in a close relationship because I will probably be hurt.

24. Lightening is quite dangerous and likely to strike someone.

25. The clothes I choose will be right for the occasion.

26. Lions are still a threat, even when caged.

27. I would have sunny weather if I went camping.

28. Strangers don't look at me critically.

29. I am not afraid of over-sleeping my alarm clock.

30. If I buy an item one week, it will go on sale the following week.

31. There is a good chance that surgeons will remove the wrong organ or leave a sponge or an instrument in the body during surgery.

32. If I break an arm in an accident, it will be my writing arm.

33. People can't tell that I'm weak and inadequate by looking at me.

34. Other people often get credit for a task that I have done.

35. When I run for a bus, it pulls away just as I get there.

36. If there is a flu going around, I'm sure to get it.

37. If I accept one date, another better one is sure to come up.

38. I am hesitant to cross the street as I could be hit by a car.

39. I am afraid that if I really expressed my feelings I would never regain control.

40. I don't expect to accomplish anything really worthwhile in life.

41. When I leave home I don't check to see that all doors and windows are locked.

42. There will be a nuclear war in my life time.

43. My friend will be late for our appointment.

44. I would very likely be shot if I were a witness at a gun battle.

45. People rarely get hit by a baseball at ball games.

46. I most often do not create a good impression or do well in a job interview.

47. It will rain if I don't take my umbrella or raincoat on a cloudy day.

48. Amusement park rides are fun and not dangerous.

49. It is a good idea for me to check my alarm clock a couple of times before I go to bed at night.

50. I will not be fortunate enough to find a job I am sure to enjoy.

51. There is danger of infection when mixing with all kinds of strangers.

52. I don't expect to succeed in things that I do.

53. I will be ready for an appointment in plenty of time.

54. Dentists sometimes drill tongues or gums by mistake.

55. Few people in this world will ever understand me.

56. If I have the misfortune to lose blood or to hemorrhage, there will be no blood of my type available.

57. When the power goes off, I am without candles or a flashlight.

58. Because of pollution, life as we know it will be extinct in less than 75 years.

59. I am not concerned about handling things that might carry germs.

60. The drunk on the bus will choose to sit next to me.

61. I am fearful of making an awkward social mistake.

62. My chances of having a satisfying sex life are good.

63. I think that I can trust most salesmen.

64. People seem to like being around me.

65. People don't take advantage of my friendliness.

66. There are not many things that I can do better than anyone else can.

67. Store clerks wait on me promptly and politely.

68. Air travel is unsafe.

69. I don't know how to act properly in social situations.

70. Horseback riding is not dangerous.

71. I belive that I will have a chance to develop my talents in life.

72. I can handle most jobs I take on properly.

73. I would likely break a leg if I tried to ski.

74. I will accomplish all that I want to before death.

75. I will accidently stain or tear my good clothes, not clothes I don't care about.

76. My colds are likely to turn into pneumonia or bronchitis.

77. I will be well loved by someone.

78. Friends and family remember my birthday.

79. I don't depend on people as I'm too often let down.

80. A practical joker will choose me as the butt of his jokes.

APPENDIX C

RPT

Read each of the following statements and decide whether it is True or False as it pertains to you personally, most of the time.

Mark your choice on the separate answer sheet provided.

There are no right or wrong answers.

There is no time limit but do not spend too much time on any one question.

Use a pencil, not a pen.

please mark every item.

EXAMPLE:

1. There are four seasons in a year.

Answer:

1. A 1 B 2

The answer is True (A 1)

2. The United States has a prime-minister as head of state.

Answer:

2. A 1 B 2

The answer is False (B 2)

1. The light bulb which burns out is usually the most unreachable one in the house.

2. It is likely to rain on days I plan picnics and outings.

3. If I am involved in an accident in which there is only one fatality, I will be that fatality.

4. A movie I decide to see will have stopped playing the night before.

5. I will say the wrong thing at the wrong time.

6. I am confident that I can deliver a speech well.

7. When my superior calls me to his office, I feel sure that I've done something wrong.

8. I hesitate to enter in a close relationship because I will probably be hurt.

9. Strangers look at me critically.

10. If I buy an item one week, it will go on sale the following week.

11. If I break an arm in an accident, it will be my writing arm.

12. Other people often get credit for a task I have done.

13. When I run for a bus, it pulls away just as I get there.

14. If I accept one date, another better one is sure to come up.

15. I am afraid that if I really expressed my feelings I would never regain control.

16. I don't expect to accomplish anything really worthwhile in life.

17. There will be a nuclear war in my life time.

18. I would very likely be shot if I were a witness at a gun battle.

19. I most often do not create a good impression or do well in a job interyiew.

20. It will rain if I don't take my umbrella or raincoat on a cloudy day.

21. It is a good idea for me to check my alarm clock a couple of times before I go to bed at night.

22. I will not be fortunate enough to find a job I am sure to enjoy.

23. Few people in this world will ever understand me.

24. If I have the misfortune to lose blood or to hemorrhage, there will be no blood of my type available.

25. Because of pollution, life as we know it will be extinct in less than 75 years.

26. The drunk on the bus will choose to sit next to me.

27. I am fearful of making an awkward social mistake.

28. My chances of having a satisfying sex life are good.

29. I think that I can trust most salesman.

30. People seem to like being around me.

31. People don't take advantage of my friendliness.

32. Store clerks wait on me promptly and politely.

33. I don't know how to act properly in social situations.

34. I can handle most jobs I take on properly.

35. I would likely break a leg if I tried to ski.

36. I will accidently stain or tear my good clothes, not clothes I don't care about.

37. I will be well loved by someone.

38. I don't depend on people as I'm too often let down.

39. If there is a flu going around, I'm sure to get it.

40. My friend will be late for our appointment.

KEY TO RPT - FINAL FORM

All answers are keyed TRUE except for the following which are keyed FALSE:

6, 28, 29, 30, 31, 32, 34, 37

APPENDIX D

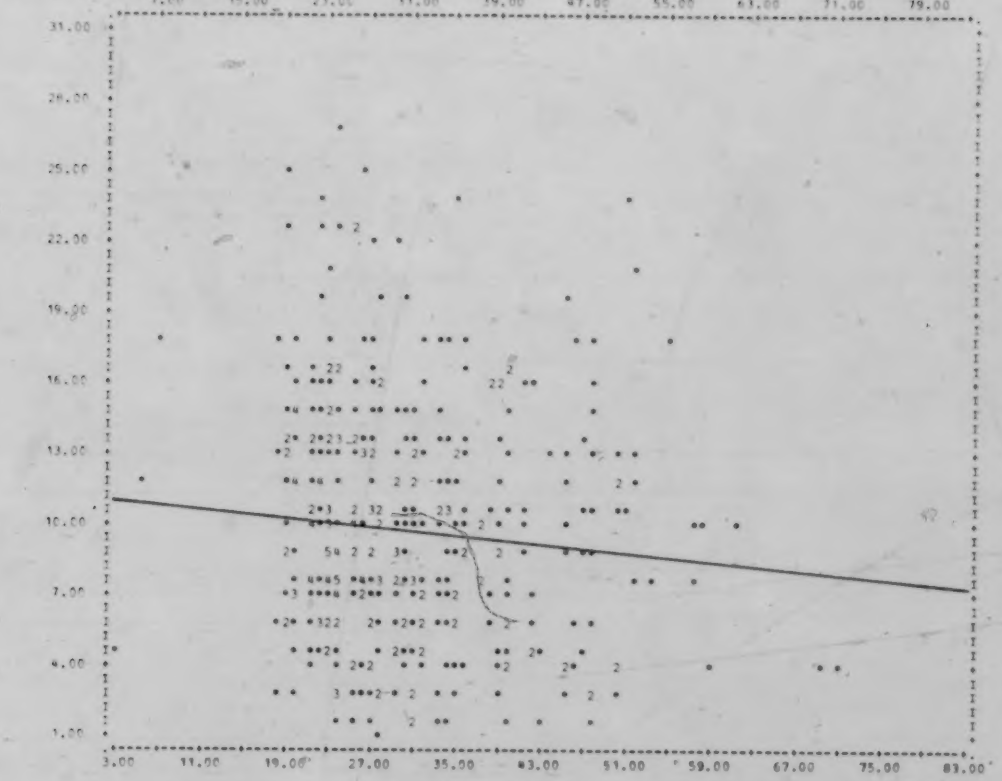
TESTS USED IN STUDY AND SOURCES

TESTS	SOURCES
Adult Irrational Ideas Inventory	Fox, E. E. and Davies, R. L. Test your rationality. Rational Living, Spring, 1971, 5, 2.
Internal-External Control Scale	Rotter, Julian B. Generalized expectancies for internal control of reinforcement. Psychological Monographs, 80, 1, 1966.
Tennessee Self-Concept	Fitts, William H. Tennessee self-concept scale, manual. Counsellor Recordings and Tests, Box 6184, Acklen Station, Nashville, Tennessee.
Life-Orientation Test	Fox, E. E. A life orientation test: correlates of biophilia and necrophilia. Unpublished doctoral dissertation, University of Alberta, 1969.
Conceptual Systems Test	Bower, A. C. Cognitive complexity and classification rule learning. Unpublished doctoral dissertation, University of Alberta, 1969.

APPENDIX E

STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES SPSSH - VERSION 6.01 01/16/76

FILE NONAME (CREATION DATE = 01/16/76)
SCATTERGRAM OF (DOWN) RPT (ACROSS) AGE



STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES SPSSH - VERSION 6.01 01/16/76

STATISTICS..

CORRELATION (R) =	-0.10899	R SQUARED =	0.01188	SIGNIFICANCE =	0.02714
STD ERR OF EST =	4.98741	INTERCEPT (A) =	11.85026	SLOPE (B) =	-0.05551

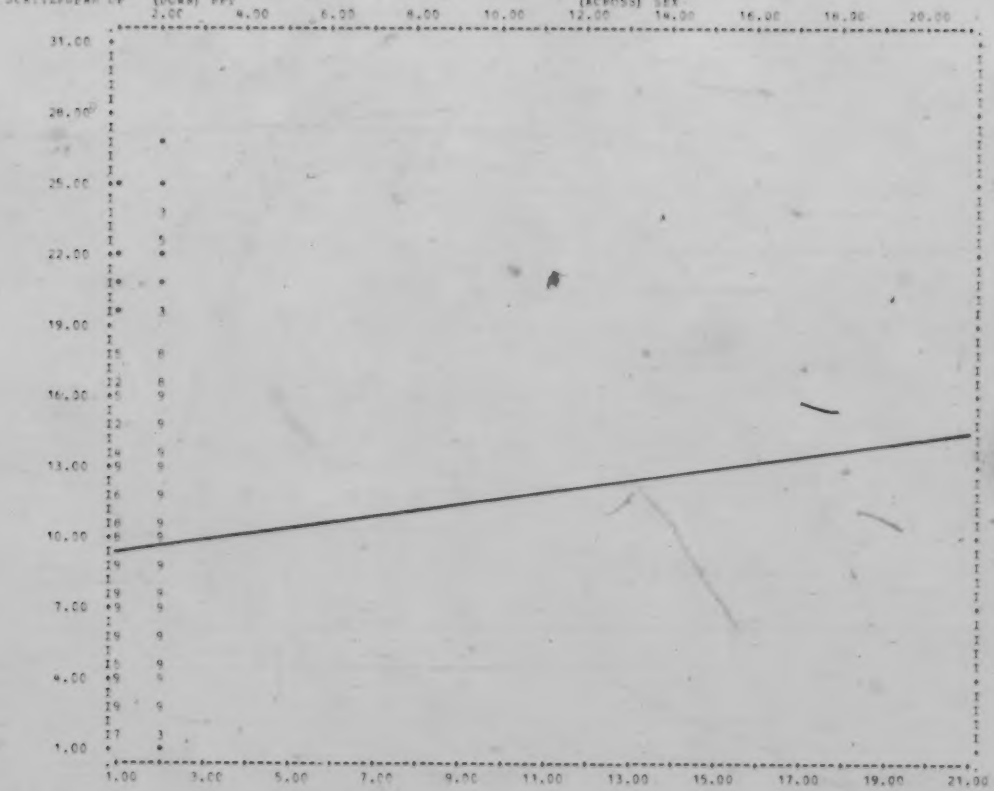
THE REGRESSION LINE CUTS THE MARGINS OF THE PLOT AT
A VALUE OF 11.72814 ON THE LEFT MARGIN
A VALUE OF 7.19836 ON THE RIGHT MARGIN

PLOTTED VALUES =	411	EXCLUDED VALUES =	0	MISSING VALUES =	0

'*********' IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED.

STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES SPSSH - VERSION 6.01 01/16/76

FILE NONAME (CREATION DATE = 01/16/76)
SCATTERGRAM OF (DOWN) PPT (ACROSS) SET



STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES SPSSH - VERSION 6.01 01/16/76

STATISTICS..

CORRELATION (R)	-	0.14554	R SQUARED	-	0.02118	SIGNIFICANCE	- 0.00310
STD ERR OF EST	-	4.92407	INTERCEPT (A)	-	7.61314	SLOPE (B)	- 1.53285

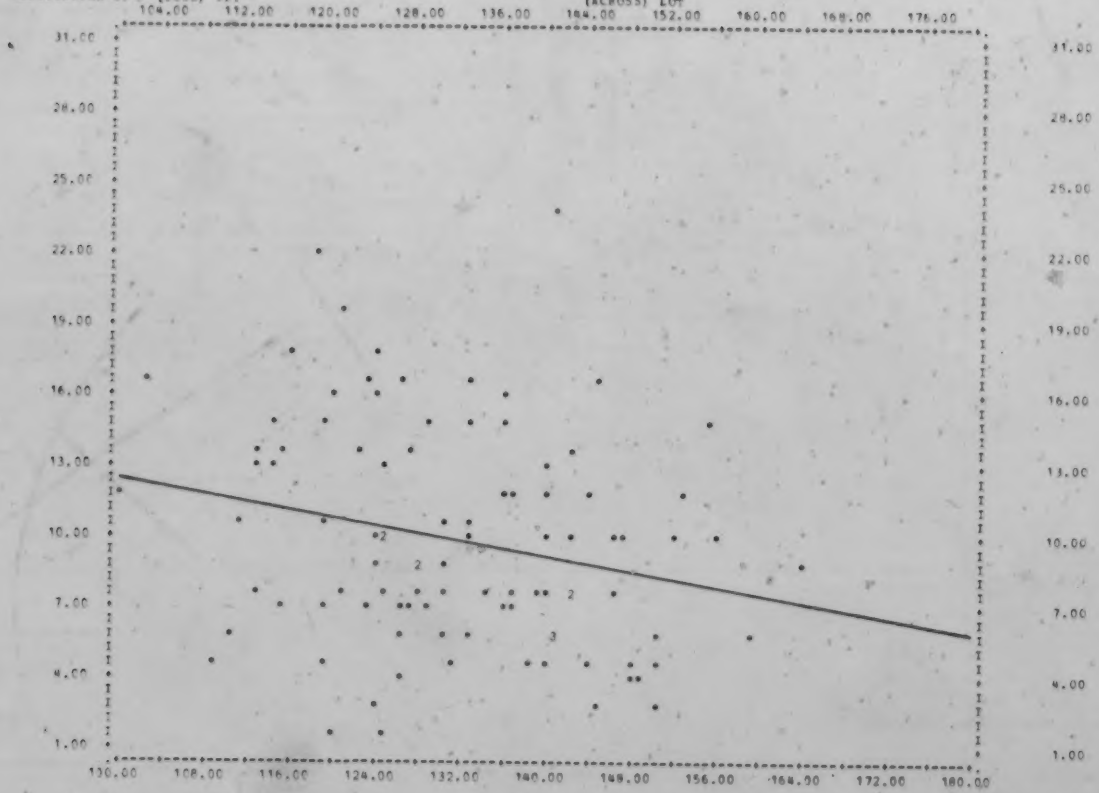
THE REGRESSION LINE CUTS THE MARGINS OF THE PLOT AT
A VALUE OF 8.83942 ON THE LEFT MARGIN
A VALUE OF 15.64857 ON THE TOP MARGIN

PLOTTED VALUES	-	411	EXCLUDED VALUES	-	0	MISSING VALUES	- 0

'.........' IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED.

STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES SPSSH - VERSION 6.01 01/16/76

FILE NONAME (CREATION DATE = 01/16/76)
SCATTERGRAM OF (DOWN) PPT (ACROSS) LOT



STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES SPSSH - VERSION 6.01 01/16/76

STATISTICS..

CORRELATION (R)=	-0.22728	R SQUARED =	0.05166	SIGNIFICANCE =	0.02441
STD ERR OF EST =	4.51873	INTERCEPT (A) =	20.60144	SLOPE (B) =	-0.08062

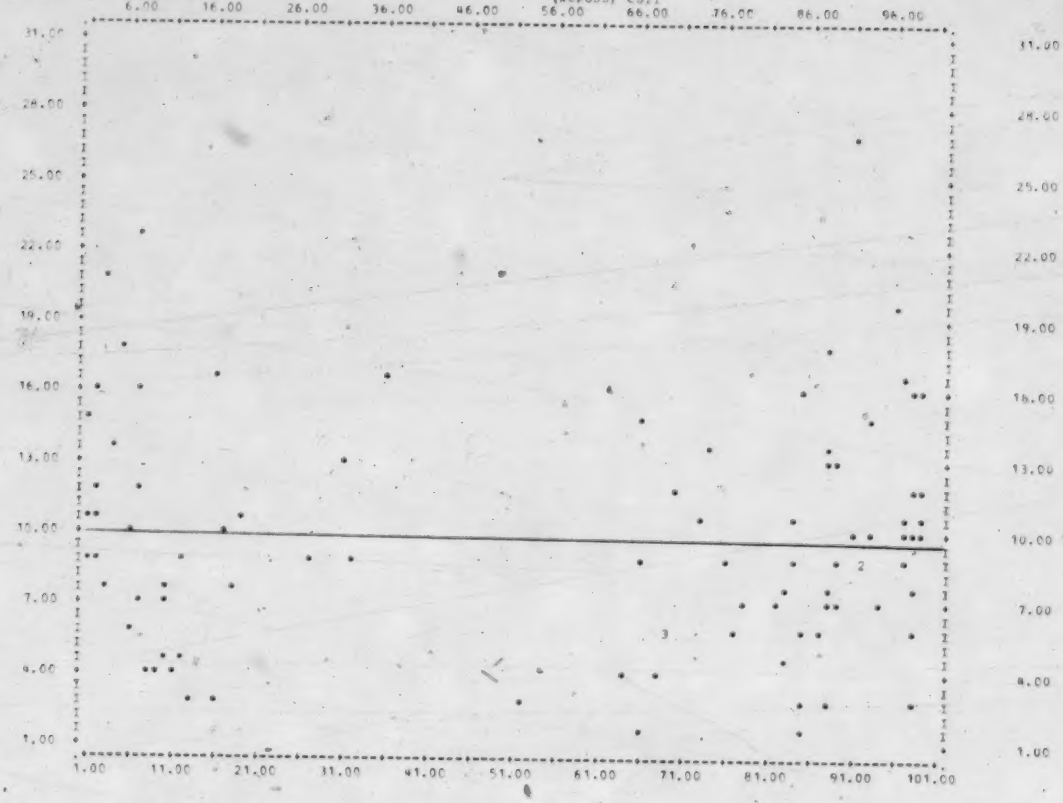
THE REGRESSION LINE CUTS THE MARGINS OF THE PLOT AT
A VALUE OF 12.60375 ON THE LEFT MARGIN
A VALUE OF 6.02501 ON THE RIGHT MARGIN

PLOTTED VALUES =	98	EXCLUDED VALUES=	0	MISSING VALUES =	313

'********' IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED.

STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES SPSSH - VERSION 6.01 01/16/76

FILE NONAME (CREATION DATE = 01/16/76)
SCATTERGRAM OF (DOWN) RPT (ACROSS) CSTT



STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES SPSSH - VERSION 6.01 01/16/76

STATISTICS..

CORRELATION (R) =	-0.01888	R SQUARED =	0.00036	SIGNIFICANCE =	0.85901
STD ERR OF EST =	8.98686	INTERCEPT (A) =	10.04037	SLOPE (B) =	-0.00246

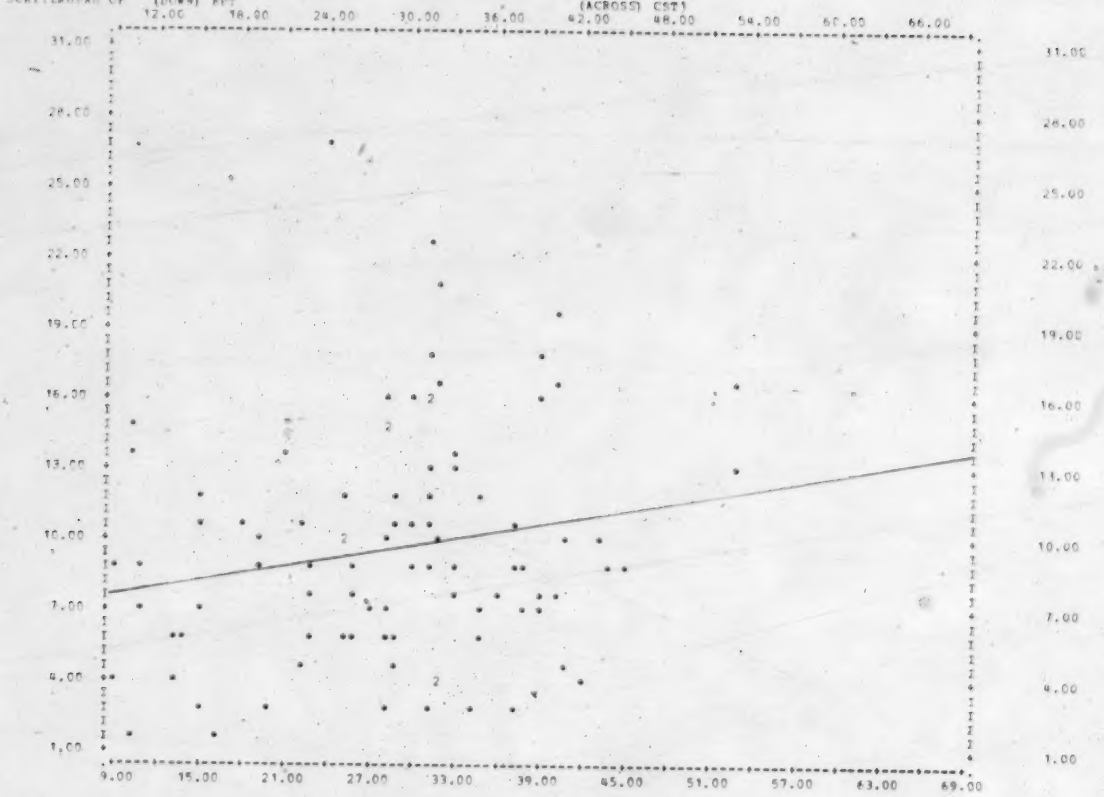
THE REGRESSION LINE CUTS THE MARGINS OF THE PLOT AT
A VALUE OF 10.04037 ON THE LEFT MARGIN
A VALUE OF 9.78994 ON THE RIGHT MARGIN

PLOTTED VALUES =	91	EXCLUDED VALUES =	0	MISSING VALUES =	320

'********' IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED.

STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES SPSSH - VERSION 6.01 01/16/76

FILE NONAME (CREATION DATE = 01/16/76)
SCATTERGRAM OF (DOWN) RPT (ACROSS) CST1



STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES SPSSH - VERSION 6.01 01/16/76

STATISTICS..

CORRELATION (R) =	0.20828	R SQUARED =	0.04338	SIGNIFICANCE =	0.04757
STD ERR OF EST =	4.87836	INTERCEPT (A) =	6.90726	SLOPE (B) =	0.10486

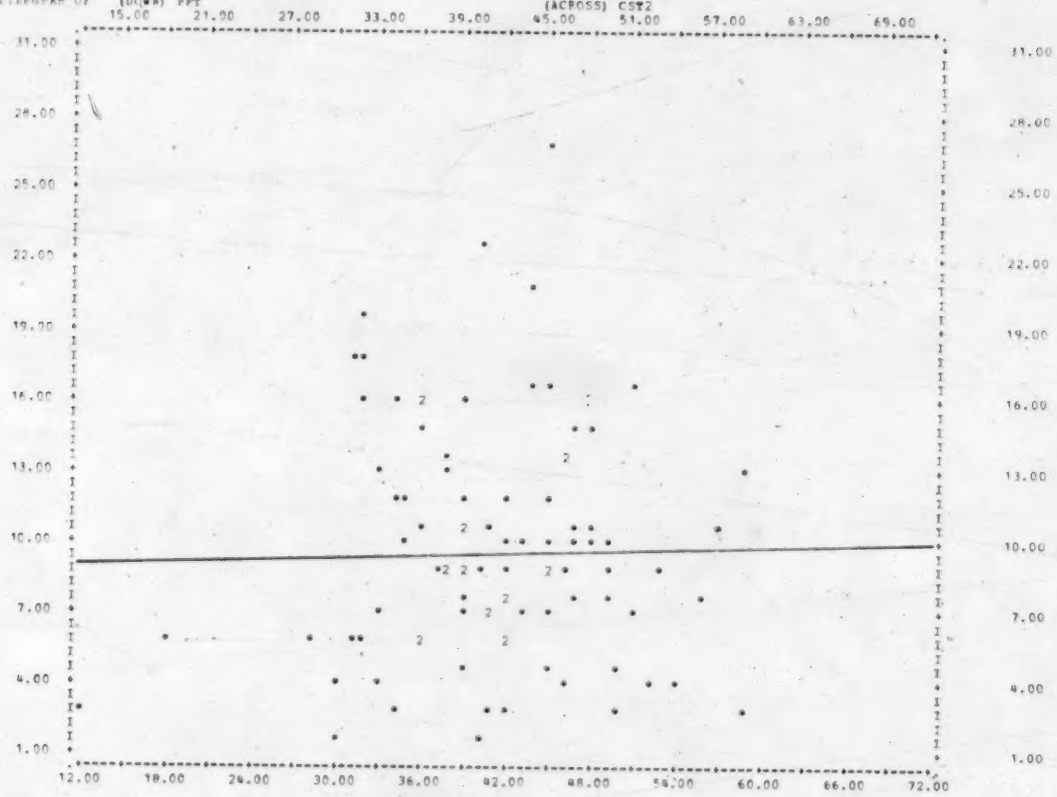
THE REGRESSION LINE CUTS THE MARGINS OF THE PLOT AT
A VALUE OF 7.78813 ON THE LEFT MARGIN
A VALUE OF 14.20586 ON THE RIGHT MARGIN

PLOTTED VALUES =	91	EXCLUDED VALUES =	0	MISSING VALUES =	320

'*********' IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED.

STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES SPSSH - VERSION 6.01 01/16/76

FILE NONAME (CREATION DATE = 01/16/76)
SCATTERGRAM OF (DOWN) PPT (ACROSS) CST2



STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES SPSSH - VERSION 6.01 01/16/76

STATISTICS..

CORRELATION (R) =	0.02303	R SQUARED	=	0.00053	SIGNIFICANCE	= 0.82843
STD ERR OF EST =	4.98643	INTERCEPT (A)	=	9.30657	SLOPE (B)	= 0.01445

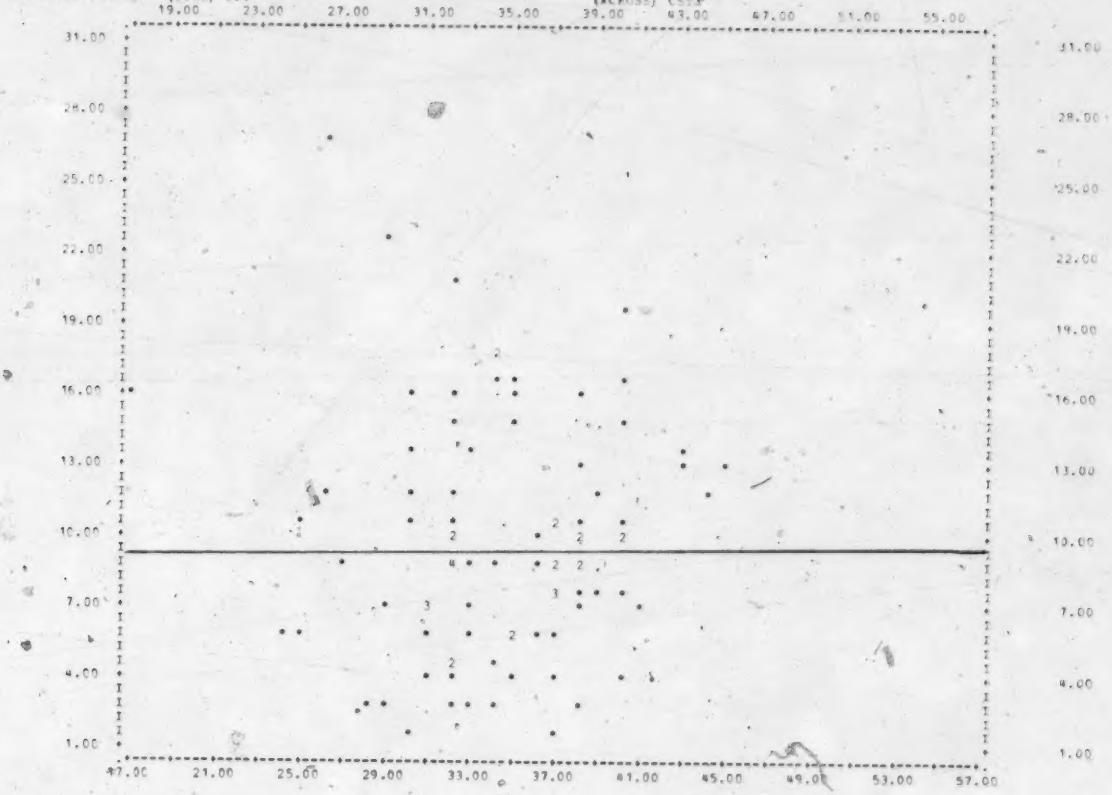
THE REGRESSION LINE CUTS THE MARGINS OF THE PLOT AT
A VALUE OF 9.47130 ON THE LEFT MARGIN
A VALUE OF 10.35567 ON THE RIGHT MARGIN

PLOTTED VALUES = 91 EXCLUDED VALUES= 0 MISSING VALUES = 320

'*********' IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED.

STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES SPSSH - VERSION 6.01 01/16/76

FILE NONAME (CREATION DATE = 01/16/76)
SCATTERGRAM OF (DOWN) RPT (ACROSS) CST#



STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES SPSSH - VERSION 6.01 01/16/76

STATISTICS..

CORRELATION (R) =	-0.00343	R SQUARED =	0.00001	SIGNIFICANCE =	0.97424
STD ERR OF EST =	4.98772	INTERCEPT (A) =	10.02319	SLOPE (B) =	-0.00356

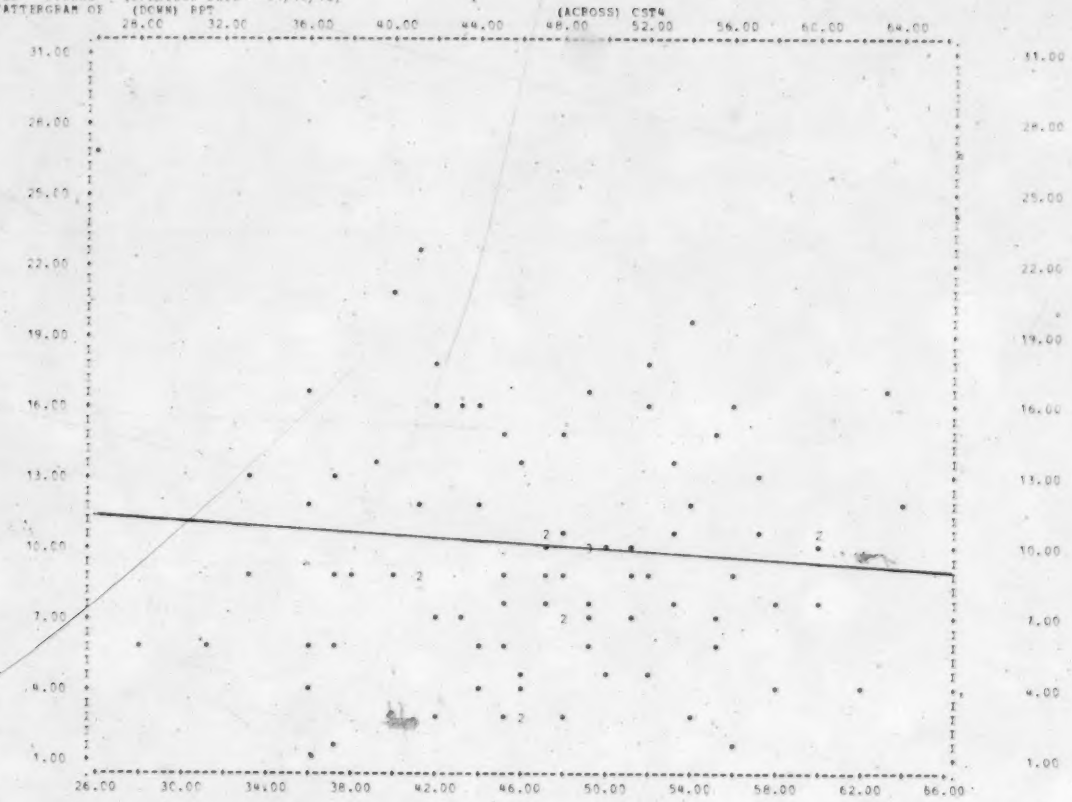
THE REGRESSION LINE CUTS THE MARGINS OF THE PLOT AT
A VALUE OF 9.96410 ON THE LEFT MARGIN
A VALUE OF 9.81885 ON THE RIGHT MARGIN

PLOTTED VALUES =	91	EXCLUDED VALUES =	0	MISSING VALUES =	320

'*********' IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED.

STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES SPSSH - VERSION 6.01 01/16/76

FILE NONAME (CREATION DATE = 01/16/76)
SCATTERGRAM OF (DOWN) RPT (ACROSS) CST4



STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES SPSSH - VERSION 6.01 01/16/76

STATISTICS..

CORRELATION (R)=	-0.07770	R SQUARED =	0.00604	SIGNIFICANCE =	0.46410
STD ERR OF EST =	4.97267	INTERCEPT (A) =	12.18557	SLOPE (B) =	-0.04847

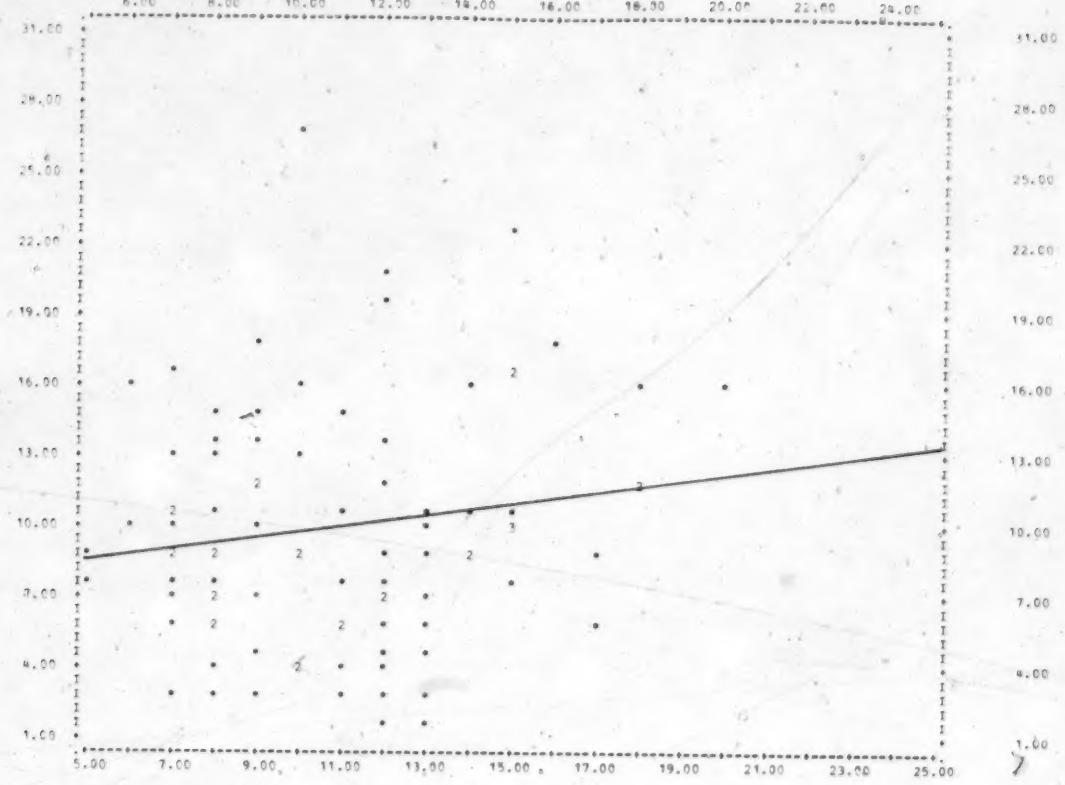
THE REGRESSION LINE CUTS THE MARGINS OF THE PLOT AT
A VALUE OF 10.94474 ON THE LEFT MARGIN
A VALUE OF 8.96718 ON THE RIGHT MARGIN

PLOTTED VALUES =	91	EXCLUDED VALUES=	0	MISSING VALUES =	320

'*********' IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED.

STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES SPSSH - VERSION 6.01 01/16/76

FILE NONAME (CREATION DATE = 01/16/76)
SCATTERGRAM OF (DOWN) EPT (ACROSS) CSES



STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES SPSSH - VERSION 6.01 01/16/76

STATISTICS..

CORRELATION (R) =	0.15394	R SQUARED =	0.02370	SIGNIFICANCE =	0.14516
STD ERR OF EST =	4.92830	INTERCEPT (A) =	7.39523	SLOPE (B) =	0.23010

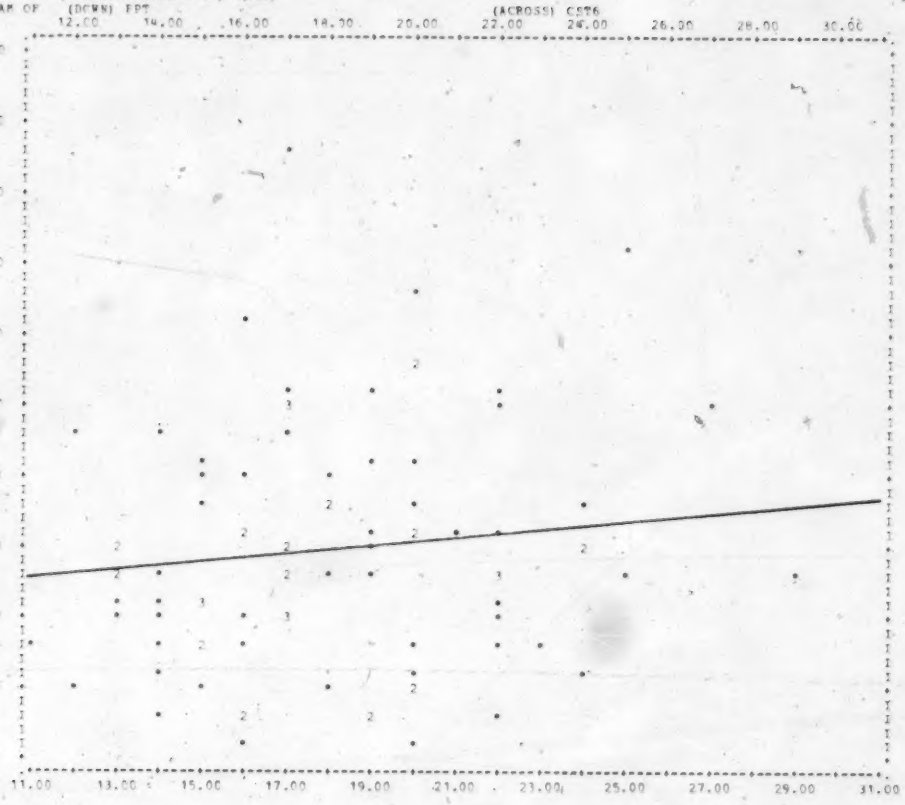
THE REGRESSION LINE CUTS THE MARGINS OF THE PLOT AT
A VALUE OF 8.49974 ON THE LEFT MARGIN
A VALUE OF 13.19387 ON THE RIGHT MARGIN

PLOTTED VALUES =	91	EXCLUDED VALUES =	0	MISSING VALUES =	320

'*********' IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED.

STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES SPSSH - VERSION 6.01 01/16/76

FILE NONAME (CREATION DATE = 01/16/76)
SCATTERGRAM OF (DOWN) EPT (ACROSS) CST6



STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES SPSSH - VERSION 6.01 01/16/76

STATISTICS..

CORRELATION (R) =	0.14883	R SQUARED	=	0.02215	SIGNIFICANCE	=	0.15913
STD ERR OF EST =	4.93220	INTERCEPT (A)	=	6.26672	SLOPE (B)	=	0.20166

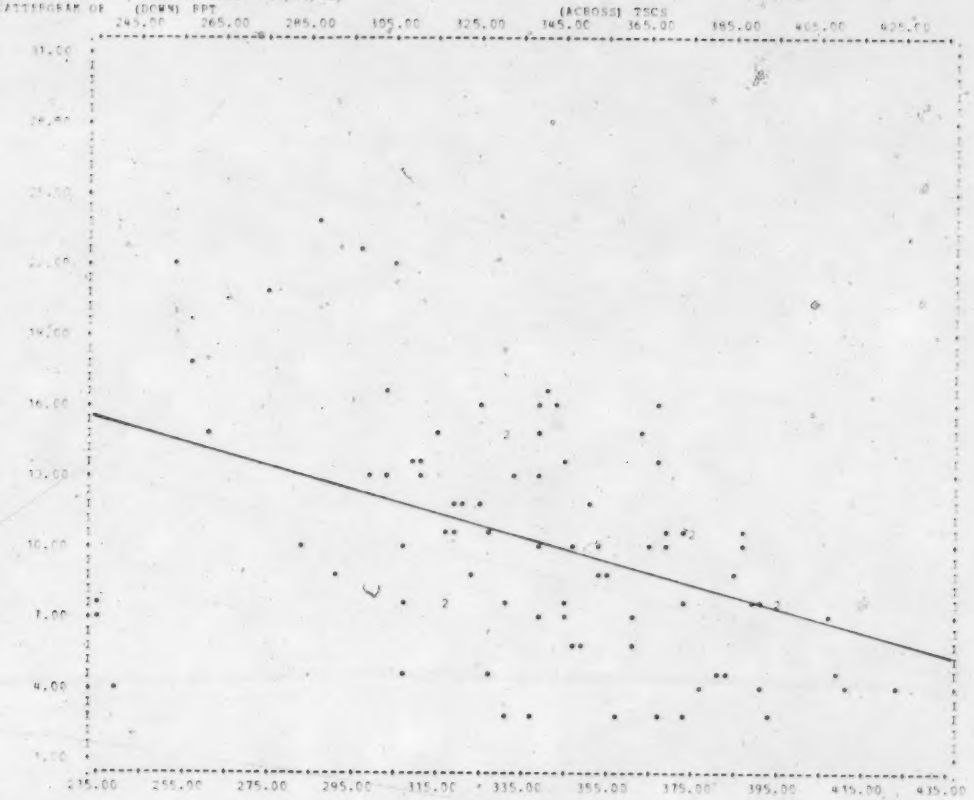
THE REGRESSION LINE CUTS THE MARGINS OF THE PLOT AT
A VALUE OF 8.04469 ON THE LEFT MARGIN
A VALUE OF 12.55863 ON THE RIGHT MARGIN

PLOTTED VALUES =	91	EXCLUDED VALUES=	0	MISSING VALUES =	320		

'.....' IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED.

STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES SPSSH - VERSION 6.01 01/16/76

FILE NONAME (CREATION DATE = 01/16/76)
SCATTERGRAM OF (DOWN) PPT (ACROSS) ZSCS



STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES SPSSH - VERSION 6.01 01/16/76

STATISTICS..

CORRELATION (R) =	-0.43938	R SQUARED	=	0.19305	SIGNIFICANCE	=	0.00002
STD ERR OF EST =	4.45513	INTERCEPT (A)	=	28.21581	SLOPE (B)	=	-0.05264

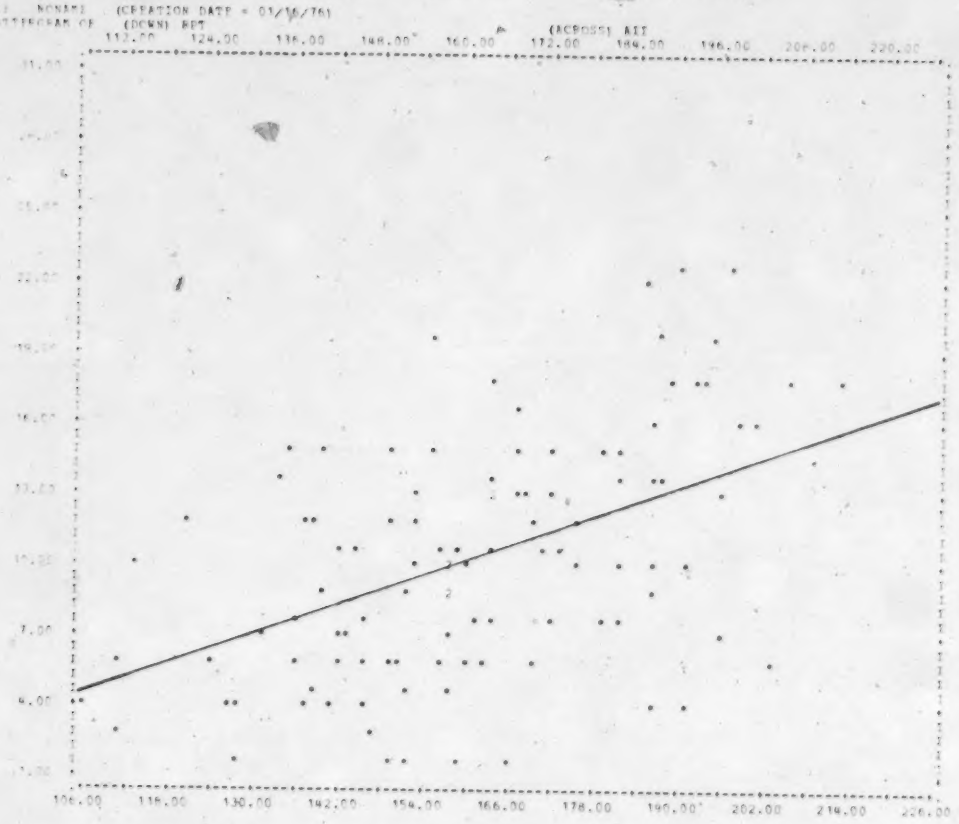
THE REGRESSION LINE CUTS THE MARGINS OF THE PLOT AT
A VALUE OF 15.95197 ON THE LEFT MARGIN
A VALUE OF 5.21443 ON THE RIGHT MARGIN

PLOTTED VALUES =	87	EXCLUDED VALUES =	0	MISSING VALUES =	329		

'*********' IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED.

STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES SPSSH - VERSION 6.01 01/16/76

FILE NONAME (CREATION DATE = 01/16/76)



STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES SPSSH - VERSION 6.01 01/16/76

STATISTICS..

CORRELATION (R) =	0.50078	R SQUARED =	0.25080	SIGNIFICANCE =	0.00001
STD ERR OF EST =	4.37119	INTERCEPT (A) =	-7.35991	SLOPE (B) =	0.10990

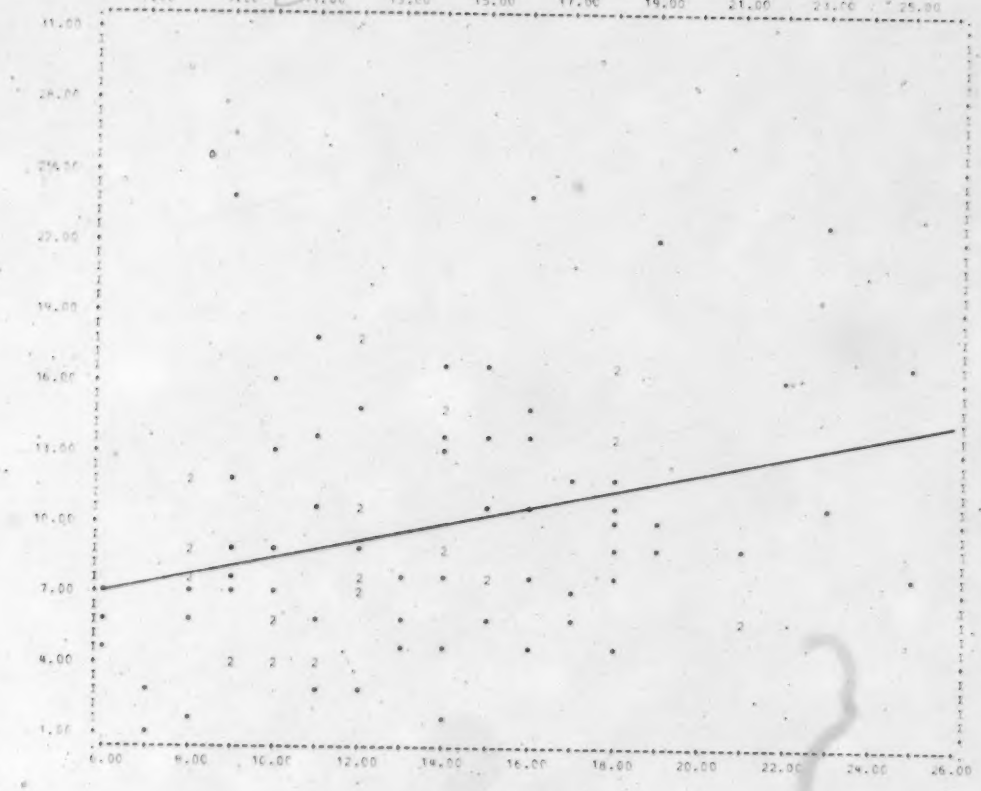
THE REGRESSION LINE CUTS THE MARGINS OF THE PLOT AT:
A VALUE OF 4.15796 ON THE LEFT MARGIN
A VALUE OF 17.60957 ON THE RIGHT MARGIN

PLOTTED VALUES =	105	EXCLUDED VALUES =	0	MISSING VALUES =	106

'.....' IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED.

STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES SPSSH - VERSION 6.01 01/16/76

FILE NONAME (CREATION DATE = 01/16/76)
SCATTERGRAM OF (DOWN) SPT (ACROSS) IPC



STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES SPSSH - VERSION 6.01 01/16/76

STATISTICS...

CORRELATION (R)=	0.33316	R SQUARED =	0.11100	SIGNIFICANCE =	0.00091
STD ERR OF EST =	4.79564	INTERCEPT (A) =	4.82551	SLOPE (B) =	0.37655

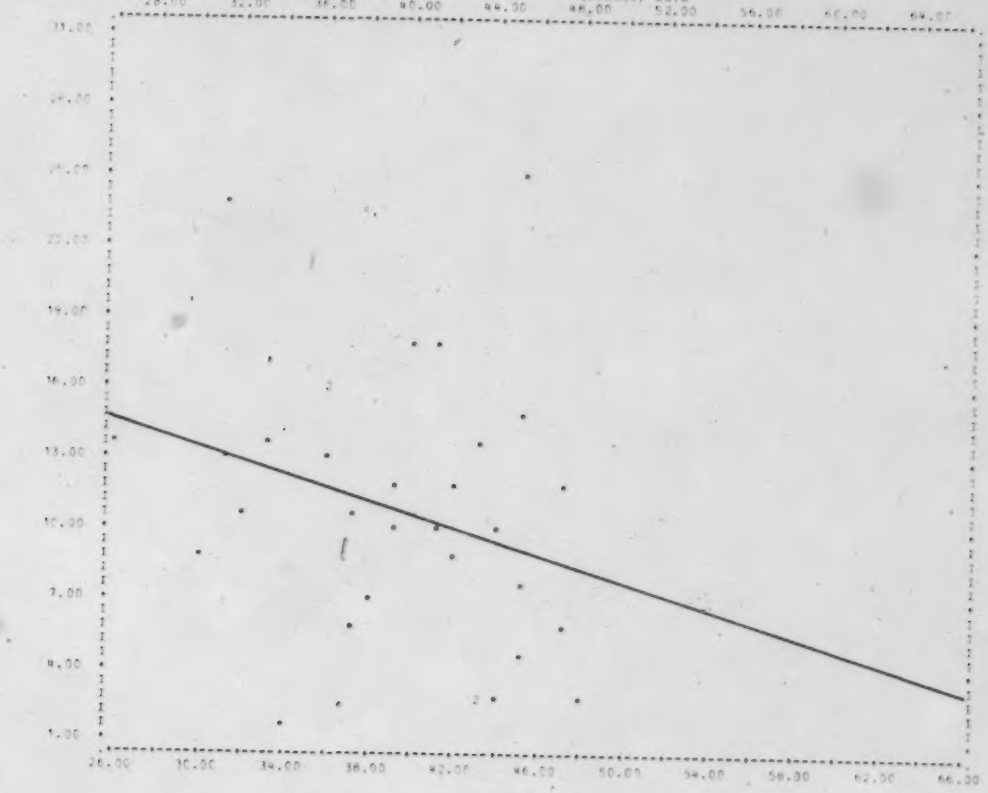
THE REGRESSION LINE CUTS THE MARGINS OF THE PLOT AT
A VALUE OF 7.00951 ON THE LEFT MARGIN
A VALUE OF 14.69135 ON THE RIGHT MARGIN

PLOTTED VALUES =	96	EXCLUDED VALUES=	0	MISSING VALUES =	315

'*********' IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED.

STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES SPSSH - VERSION 6.01 01/16/76

FILE NONAME (CREATION DATE = 01/16/76)
SCATTERGRAM OF (DOWN) PET WITH (ACROSS) DATA



STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES SPSSH - VERSION 6.01 01/16/76

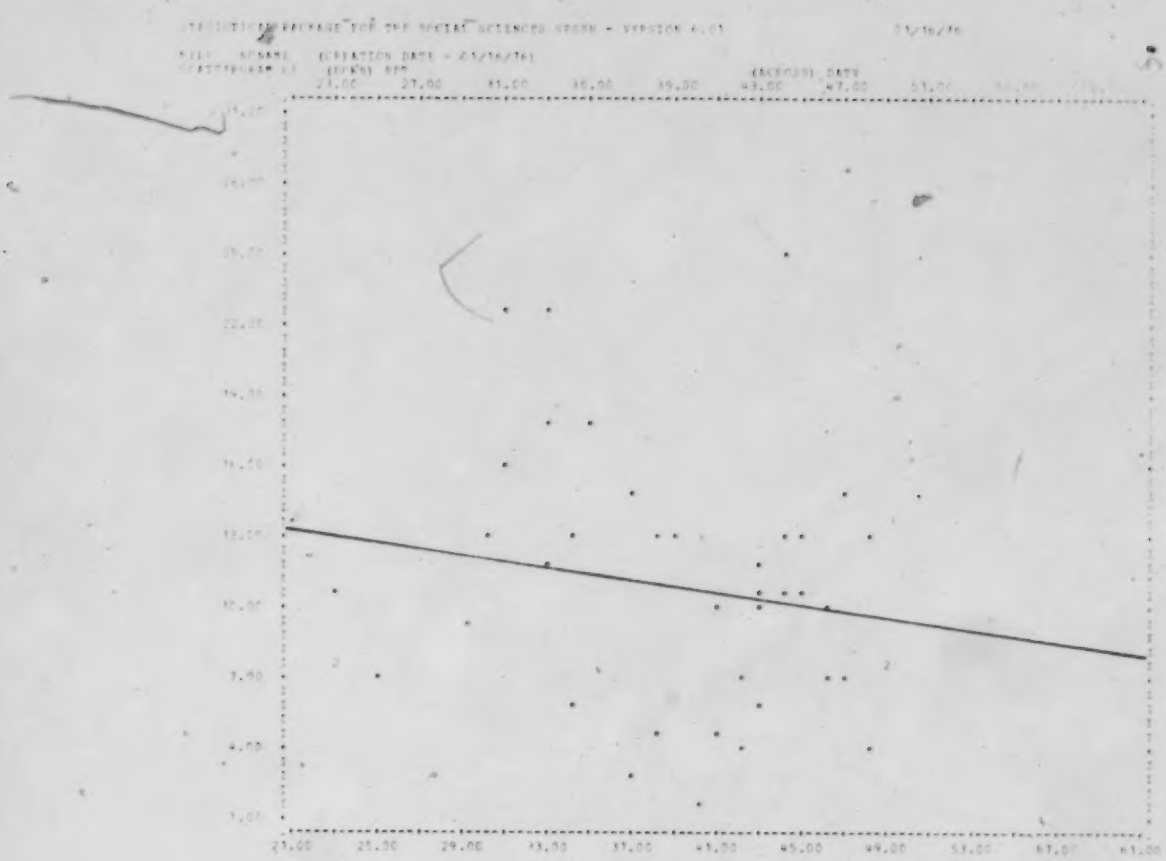
STATISTICS..

CORRELATION (R) -	-0.26393	R SQUARED -	0.06966	SIGNIFICANCE -	0.19440
STD ERR OF EST -	5.69072	INTERCEPT (A) -	21.53947	SLOPE (B) -	-0.26767

THE REGRESSION LINE CUTS THE MARGINS OF THE PLOT AT
A VALUE OF 19.68715 ON THE LEFT MARGIN
VALUE OF 3.70624 ON THE RIGHT MARGIN

PLOTTED VALUES - 42 EXCLUDED VALUES- 0 MISSING VALUES - 179

'********' IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED.



STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES SPSSR - VERSION 6.01 11/16/76

STATISTICS..

CORRELATION (R)=	-0.17796	R SQUARED =	0.03167	SIGNIFICANCE =	0.26562
STD ERR OF EST =	5.33423	INTERCEPT (A) =	55.64090	SLOPE (B) =	-0.12058

THE REGRESSION LINE CROSSES THE MARGINS OF THE PLOT AT
A VALUE OF 33.15693 ON THE LEFT MARGIN
A VALUE OF 8.23722 ON THE RIGHT MARGIN

PLOTTED VALUES = 41 EXCLUDED VALUES= 0 *MISSING VALUES = 370

'*********' IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED.

APPENDIX F

ANCILLARY FINDINGS

In examining the data, some interesting observations were made. Table 5, the correlation matrix, gives evidence of relationships not predicted on an a priori basis. However, they invite attention. Findings will be reported below, followed by pertinent conclusions.

a) The RPT and sub-test 1 of the CST, Divine Fate Control, correlate .208 attaining a significance level of .048.

b) The correlation between the LOT and the CST is .470, and the level of confidence obtained is .042.

c) The LOT correlates significantly with the AII, the correlation coefficient being -.608, and the level of significance, .0001.

d) Significant correlations were obtained between the I-E scale and age and sex, the coefficients being -.344 (sig. .001) and .288 (sig. .004) respectively.

e) The Abstract Reasoning Ability sub-test of the DAT correlates significantly with age and sex. The correlation between abstract reasoning and age is -.634 (sig. .0001). A coefficient of -.366 (sig. .039) was obtained between abstract reasoning ability and sex.

Conclusions

a) Individuals who score high on the RPT are more inclined to believe in divine fate control than do individuals who score low on the RPT.

b) High scorers on the LOT are more conceptually complex, as measured by the CST, than low LOT scorers.

c) Low scorers on the LOT are more irrational in their belief system than are high LOT scorers.

d) Individuals who are higher on external control, as evidenced by scores on the I-E scale, tend to be young females.

e) Individuals who score high on abstract reasoning ability tend to be young males.